

AR07

MacMillan Bloedel Limited 1978 Annual Report



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On pourra se procurer un exemplaire
français du présent rapport en s'adressant à
The Secretary,
MacMillan Bloedel Limited,
1075 West Georgia Street,
Vancouver, B.C. V6E 3R9

This report is printed on MacMillan Bloedel newsprint manufactured at Powell River, British Columbia. The cover and title pages in the report are linerboard produced at MB's mill in Port Alberni, B.C.
Original paintings are by Robin Arkell and line drawings are by Bob Massé, both of Vancouver.
The Financial Statements are printed on Island Offset from MB's Island Paper Mills at New Westminster, B.C.

MacMillan Bloedel Limited

Financial Highlights

	1978	1977	Per Cent Increase (Decrease)
For the year ended December 31	(\$000)		
Sales and other income	\$2,010,402	\$1,714,800	17.2%
Net earnings –			
Amount:			
Before extraordinary item	\$ 100,947	\$ 60,618	66.5
After extraordinary item	\$ 100,947	\$ 38,349	163.2
Per Common share:			
Before extraordinary item (dollars)	\$ 4.50	\$ 2.70	66.7
After extraordinary item (dollars)	\$ 4.50	\$ 1.65	172.7
Cash flow from operations:			
Amount	\$ 200,554	\$ 137,004	46.4
Per Common share (dollars)	\$ 9.43	\$ 6.44	46.4
Additions to property, plant and equipment	\$ 121,557	\$ 77,353	57.1
Capital spending approvals	\$ 434,700	\$ 148,900	191.9
Dividends on Common shares:			
Amount	\$ 20,198	\$ 8,505	137.5
Per Common share (dollars)	\$.95	\$.40	137.5
Return on capital employed (1)	10.0%	5.2%	92.3
Price range of Common shares (dollars):			
High	\$ 25.37	\$ 24.75	2.5
Low	\$ 15.50	\$ 16.00	(3.1)
Ratio of earnings to interest charges (2)	6.2:1	4.5:1	37.8
Return on Common shareholders' equity (3)	15.9%	6.7%	137.3
At December 31			
Working capital	\$ 300,975	\$ 292,950	2.7
Current ratio	1.9:1	2.0:1	(5.0)
Long term debt	\$ 341,738	\$ 309,779	10.3
Total assets	\$1,549,253	\$1,360,946	13.8
Percentage of long term debt to total capital employed	28.5%	29.2%	(2.4)
Book value of each Common share (dollars)	\$ 28.26	\$ 24.69	14.5
Number of Common shareholders	16,991	16,709	1.7
Number of employees	23,948	23,865	.3

- 1) "Return on capital employed" is defined as net earnings plus minority interests and long term debt interest after tax as a percentage of total assets less current liabilities.
- 2) "Ratio of earnings to interest charges" has been calculated by dividing earnings before income taxes, equity in earnings of partly-owned companies, minority interests in subsidiaries and extraordinary item plus interest expense, by interest expense.
- 3) "Return on Common shareholders' equity" is defined as net earnings available to Common shareholders as a percentage of that equity.



Letter to the Shareholders

1978 Results

1978 marked record new highs for sales, net earnings and cash flow. This record performance resulted from a combination of vigorous markets in virtually all sectors, a decline in the value of the Canadian dollar relative to other currencies, principally the United States dollar, increased productivity, and continued emphasis on cost controls.

1978 also marked the turn in MacMillan Bloedel's recent history from rehabilitation to expansion. For three years the Company has been fighting back from the series of adversities that struck all at one time in 1975 — strikes, shipping losses and a worldwide recession. That is now all behind us. We have identified and are acting upon our significant problems, we have embarked on our modernization program, and we have now set our eyes firmly on the future instead of the past.

Sales of Products and Services (millions of dollars)

		Per Cent Increase (Decrease)
1974	\$1,396	15%
1975	1,297	(7)
1976	1,520	17
1977	1,707	12
1978	2,005	17

Sales of Products by Market

	1978	1977	1976	1975	1974
U.S.A.	51%	49%	44%	43%	39%
Canada	20	20	24	24	21
U.K. and Continental Europe	17	18	19	20	24
Japan and Orient	7	7	7	7	8
Other	5	6	6	6	8
	100%	100%	100%	100%	100%

Capital Spending

Even more important, in 1978 we reached a new high in capital spending authorizations that will assure further growth in earnings and cash flows in the future. Our objective is to put all our facilities into first rate competitive shape as fast as possible.

The major items are already well known:—

- the new self-propelled log carrier Haida Brave
- the new sawmill and the plywood mill modernization program at Port Alberni
- the new newsprint machine at Powell River
- other machine speedups and quality improvements at both Port Alberni and Powell River
- the second TMP line at Powell River
- process and control improvements at Harmac.

In addition, of course, there are literally hundreds of smaller projects scattered among all our British Columbia facilities, and substantial improvement programs at the MacMillan Rothesay newsprint mill in Saint John, New Brunswick, our forest products complex in Alabama, and our shipping container plants in Canada, the United States and the United Kingdom.

In February 1977 we announced a five year capital spending program of \$600 million aimed at incorporating the best new equipment and technology available into all our operations. Just a few months ago

we announced that the program has now been expanded to \$1 billion in the five years through 1982. A summary

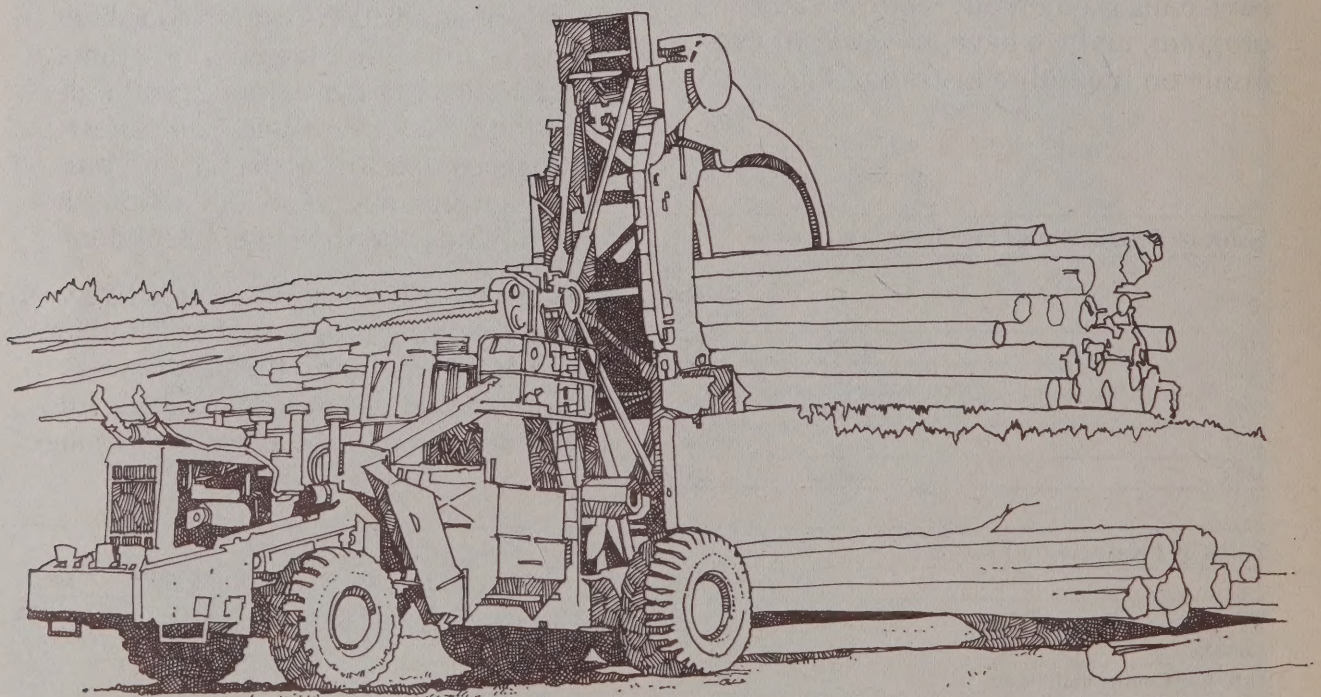
breakdown of that program which is, of course, subject to adjustment for changing conditions, is as follows:

Capital Spending by Business Segment (millions of dollars)

	B.C.	Rest of Canada	U.S.A.	Other	Total
Raw Materials	\$155	\$ 3	\$105	\$ —	\$ 263
Building Materials	167	15	37	3	222
Pulp and Paper	341	23	—	—	364
Linerboard and Packaging	20	10	78	29	137
Other	43	—	—	2	45
Total	\$726	\$51	\$220	\$34	\$1,031

Capital Spending by Type of Investment (millions of dollars)

	B.C.	Rest of Canada	U.S.A.	Other	Total
Pollution abatement/safety	\$ 30	\$ 5	\$ 5	\$ —	\$ 40
Capital replacement	232	29	45	14	320
Discretionary projects to improve productivity and expand operations	464	17	170	20	671
Total	\$726	\$51	\$220	\$34	\$1,031



Five new dry land log sorting grounds in 1978.

Only by continuing investment in the newest available technology can we be assured that the fundamental earning power of the Company will continue to grow, and that we can remain profitable and competitive in poor markets as well as strong markets.

Future Growth and Expansion

The foregoing is not intended to indicate that the total rehabilitation task has been completed. It has not. However, the major projects are underway, most of the others are in the implementation or design phase, and we are now in a position to allocate our principal planning and financial resources to growth and expansion.

There are a number of potential opportunities depending on raw material availability and growth in world markets. For instance, our bleached kraft pulp mill at Harmac could be expanded by the construction of a new recovery boiler and improved pulping and bleaching systems. At Port Alberni we could expand our thermo-mechanical pulping facilities and our linerboard production. Our timberland base at Alabama should be further expanded to support either additional linerboard or expansion into corrugated medium, newsprint, market pulp, or some combination thereof. Our jointly-owned forest plantation in the State of Santa Catarina, Brazil, is rapidly approaching early maturity and plans must be developed for its utilization.

The Company for many years has maintained a position of leadership in advanced forest management practices. Even further programs are now being planned to increase the forest growth and improve the species mix on the timberlands we own and manage.

Our future is limited only by our ability to plan effectively and implement these plans efficiently. In our opinion, our management organization is equal to the task, and we are already hard at work to see that the job is done well.

Business Outlook

There is room for optimism as we look at the prospects for 1979. Growing strength in offshore markets for building materials will tend to offset expected weakness in the United States as new housing starts decline from 1978 levels. World pulp markets have firmed up ahead of our previous expectations and should remain strong. Newsprint is still in tight supply and should remain firm in the year to come. By reason of our forward cover, we are forecasting additional benefits from the continuation of a lower Canadian dollar relative to the United States dollar. Taking all these factors into account, and despite the possibility of a more severe slowdown than we now expect in the United States economy during the year, we believe our prospects for higher earnings in 1979 are excellent.

Contribution to Sales by Product

	1978	1977	1976	1975	1974
Lumber	32%	29%	29%	25%	32%
Panelboards	11	11	10	11	9
Newsprint	23	23	23	25	22
Pulp and Fine Paper	10	10	13	12	12
Linerboard and Corrugated Containers	18	18	18	21	19
Other	6	9	7	6	6
	100%	100%	100%	100%	100%

Distribution of Total Income (Total income includes equity in earnings of partly-owned companies.)

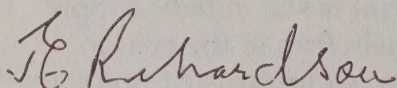
	1978	1977
Purchases of goods, supplies and services	59%	60%
Wages, salaries and employee benefits	26	28
Federal, provincial, state and municipal direct taxes	6	6
Depreciation, depletion and logging road amortization	4	4
Dividends	1	1
Earnings retained	4	1
	100%	100%

Dividend Policy

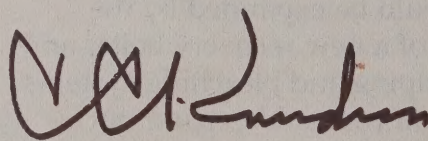
Our policy on dividend action is to move the quarterly dividend up whenever there is a demonstrated improvement in the fundamental earning power of the Company. At times, as was the case in 1978, unusual circumstances such as changes in exchange rates bring apparent improvement in profits that is not fundamental in nature and cannot therefore be relied on as a basis for our

regular dividend. In such cases the Board proposes to recognize the situation through consideration of special or year-end extra dividends rather than changes in the quarterly dividend rate.

Accordingly on January 26 the Directors declared the regular quarterly dividend of 25 cents per Common share payable on March 15, 1979, to Common shareholders of record on February 21, 1979.



J. E. Richardson
Chairman of the Board



C. C. Knudsen
President and Chief Executive Officer

Vancouver, Canada
March 21, 1979



Report to the Shareholders for the Six Months Ended June 30, 1978

During the first six months of 1978, the Company's net earnings amounted to \$41.1 million (\$1.81 per Common share) compared with \$24.6 million (\$1.12 per Common share) during the corresponding period in 1977. Approximately \$6 million of the increase was attributable to the decline of the Canadian dollar relative to other currencies, principally the United States dollar.

Operating cash flow increased to \$87.9 million from \$67.9 million last year. Sales and other income were \$959.1 million, up from \$826.6 million last year.

Second quarter earnings were \$24.2 million (\$1.08 per Common share) compared with \$16.4 million (\$.73 per Common share) in the second quarter of 1977.

To date the Company has approved \$157.8 million of new capital expenditures to replace obsolete equipment, improve

productivity, expand capacity, increase efficiency and further our pollution control program. The project slate includes a \$54 million new replacement sawmill at Port Alberni, a \$20 million renovation of our Port Alberni plywood mill, improvements to our newsprint and linerboard machines and pulping facilities in British Columbia, New Brunswick and Alabama, and further dryland log sorting yards in British Columbia. In addition, of course, we continue to invest heavily in extending our logging road networks and in replacing and upgrading our logging equipment.

During the second quarter the demand for newsprint in North America remained strong in response to vigorous growth in the newspaper and publishing industries and the possibility of a shortage that could result from strikes at pulp and paper mills in the U.S. Pacific Northwest. Prices for lumber remained firm in most market

FINANCIAL HIGHLIGHTS

	Six months ended June 30		Three months ended June 30	
	1978	1977 (Note)	1978	1977 (Note)
Sales and other income (millions)	\$959.1	\$826.6	\$500.6	\$457.3
Earnings before extraordinary item (millions)	\$ 41.1	\$ 24.3	\$ 24.2	\$ 16.2
Net earnings (millions)	\$ 41.1	\$ 24.6	\$ 24.2	\$ 16.4
Earnings per Common share				
before extraordinary item (dollars)	\$ 1.81	\$ 1.11	\$ 1.08	\$.73
Net earnings per Common share (dollars)	\$ 1.81	\$ 1.12	\$ 1.08	\$.73
Dividends on Common shares (millions)	\$ 5.3	\$ 4.2	\$ 3.2	\$ 2.1
Dividends per Common share (dollars)	\$.25	\$.20	\$.15	\$.10
Cash flow from operations (millions)	\$ 87.9	\$ 67.9	\$ 49.1	\$ 39.6
Cash flow from operations per Common share (dollars) ...	\$ 4.13	\$ 3.19	\$ 2.31	\$ 1.86
Return on capital employed	8.7%	6.2%	10.1%	7.6%
Book value per Common share at end of period (dollars) .	\$26.27	\$24.36	\$26.27	\$24.36

Unaudited

areas and prices for softwood plywood went up, reflecting a high level of new housing construction in the United States as well as improvements in overseas markets. Market pulp inventories held by producers in Canada, the United States and Scandinavia continued to drop and in Western Europe a modest price increase was announced for third quarter shipments. In the United States, linerboard prices increased but were not passed through to corrugated shipping container prices despite the continued high level of shipments. In the United Kingdom industrial packaging markets remained firm.

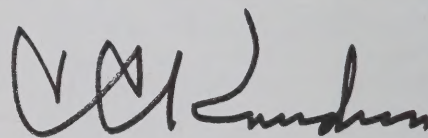
During the second half of 1978, the Company's newsprint markets should remain strong. Pulp markets are expected to show further modest improvement in response to

continued economic growth in both Europe and North America. Prices for building materials are expected to hold at or above current levels through the third quarter in most of the Company's markets, although some softening is anticipated in the fourth quarter as housing starts moderate in the United States. The current high levels of production and sales of both linerboard and industrial packaging should hold for the balance of the year, again in response to continued growth in most world economies.

In light of the Company's improved results and the improved outlook for the year as a whole, the Directors have declared a dividend of \$.20 per Common share payable September 15, 1978 to shareholders of record August 22, 1978.



J. E. Richardson
Chairman of the Board



C. C. Knudsen
President and Chief Executive Officer

Vancouver, Canada
July 31, 1978

CONSOLIDATED STATEMENT OF EARNINGS

(millions of dollars)

	Six months ended June 30		Three months ended June 30	
	1978	1977 (Note)	1978	1977 (Note)
Sales and other income	\$959.1	\$826.6	\$500.6	\$457.3
Costs and expenses:				
Cost of sales and services	799.0	699.5	412.1	383.1
Selling, general and administrative	61.0	61.8	30.9	32.3
Interest	15.9	16.5	8.2	8.1
	<u>875.9</u>	<u>777.8</u>	<u>451.2</u>	<u>423.5</u>
Earnings before income taxes and other undernoted items	83.2	48.8	49.4	33.8
Income taxes	41.1	25.0	24.4	17.9
Earnings before undernoted items	42.1	23.8	25.0	15.9
Equity in earnings of partly-owned companies1	2.1	(.3)	.8
Minority interests in subsidiaries	(1.1)	(1.6)	(.5)	(.5)
Earnings before extraordinary item	41.1	24.3	24.2	16.2
Extraordinary item (net of minority interest)	—	.3	—	.2
Net earnings	<u>\$ 41.1</u>	<u>\$ 24.6</u>	<u>\$ 24.2</u>	<u>\$ 16.4</u>
Weighted average number of Common shares outstanding (thousands)	21,261	21,261	21,261	21,261
Net earnings per Common share (dollars):*				
Before extraordinary item	\$ 1.81	\$ 1.11	\$ 1.08	\$.73
After extraordinary item	\$ 1.81	\$ 1.12	\$ 1.08	\$.73

*After provision for Class A Preferred share dividend.

Unaudited

CONSOLIDATED BALANCE SHEET

(millions of dollars)

	June 30	
	1978	1977 (Note)
ASSETS		
Current assets:		
Accounts receivable	\$ 251.2	\$ 205.0
Inventories	289.2	296.2
Other	89.8	66.4
	630.2	567.6
Investments and other assets	71.0	97.3
Property, plant and equipment, less accumulated depreciation, depletion and amortization	678.8	658.9
Intangible assets, less amortization	29.6	28.8
	<u>\$1,409.6</u>	<u>\$1,352.6</u>
LIABILITIES		
Current liabilities:		
Accounts payable and accrued liabilities	\$ 204.8	\$ 176.4
Other	55.1	77.6
	259.9	254.0
Long term debt	355.3	351.7
Deferred income taxes	123.5	118.5
Minority interests in subsidiaries	23.5	22.5
	<u>762.2</u>	<u>746.7</u>
SHAREHOLDERS' EQUITY		
Share capital:		
Class A Preferred shares	87.9	87.9
Common shares	171.2	171.2
Retained earnings	388.3	346.8
	<u>647.4</u>	<u>605.9</u>
	<u>\$1,409.6</u>	<u>\$1,352.6</u>

Unaudited

CONSOLIDATED STATEMENT OF SOURCE AND APPLICATION OF WORKING CAPITAL

(millions of dollars)

	Six months ended June 30		Three months ended June 30	
	1978	1977 (Note)	1978	1977 (Note)
SOURCE OF WORKING CAPITAL:				
Earnings —				
Net earnings	\$ 41.1	\$ 24.6	\$ 24.2	\$ 16.4
Depreciation, depletion and amortization of logging roads	38.0	35.9	19.5	18.3
Other components not affecting working capital (net)	8.8	7.4	5.4	4.9
	87.9	67.9	49.1	39.6
Net proceeds of Preferred shares	—	87.6	—	87.6
Net proceeds of long term debt	54.2	11.4	54.2	5.2
Proceeds of disposals of long term assets	4.9	7.4	2.3	3.9
	<u>147.0</u>	<u>174.3</u>	<u>105.6</u>	<u>136.3</u>
APPLICATION OF WORKING CAPITAL:				
Property, plant and equipment	49.3	29.2	33.6	17.0
Investments and other assets (including intangible assets)	2.9	4.4	2.2	1.9
Reduction in long term debt	10.6	32.5	6.9	28.6
Equity acquired from minority interests	—	25.1	—	25.1
Dividends — Shareholders of the Company	6.6	5.4	4.5	3.3
— Minority shareholders of subsidiaries3	1.6	—	1.2
	69.7	98.2	47.2	77.1
Increase in working capital	77.3	76.1	58.4	59.2
Working capital at beginning of period	293.0	237.5	311.9	254.4
Working capital at end of period	<u>\$370.3</u>	<u>\$313.6</u>	<u>\$370.3</u>	<u>\$313.6</u>

Unaudited

CONSOLIDATED STATEMENT OF RETAINED EARNINGS

(millions of dollars)

Six months ended
June 30

1978 **1977**
(Note)

Balance at beginning of period	\$353.8	\$327.6
Net earnings	<u>41.1</u>	<u>24.6</u>
	<u>394.9</u>	<u>352.2</u>
Dividends: Common shares — \$.25 per share (\$.20 in 1977)	5.3	4.2
Preferred shares — \$.38 per share (\$.35 in 1977)	<u>1.3</u>	<u>1.2</u>
	6.6	5.4
Balance at end of period	<u>\$388.3</u>	<u>\$346.8</u>

Unaudited

NOTE:

On December 15, 1977, the deduction of 3% of the value of opening inventories from taxable income, proposed in the Canadian federal budget of March 31, 1977, was enacted. The Company has given retroactive effect to this and consequently income taxes are reduced by \$1 million for the six months ended June 30, 1977.

These interim consolidated financial statements have been approved by the Board of Directors:

J. E. RICHARDSON, Director

C. C. KNUDSEN, Director

Report of the Directors

Report of the Directors

Raw Materials

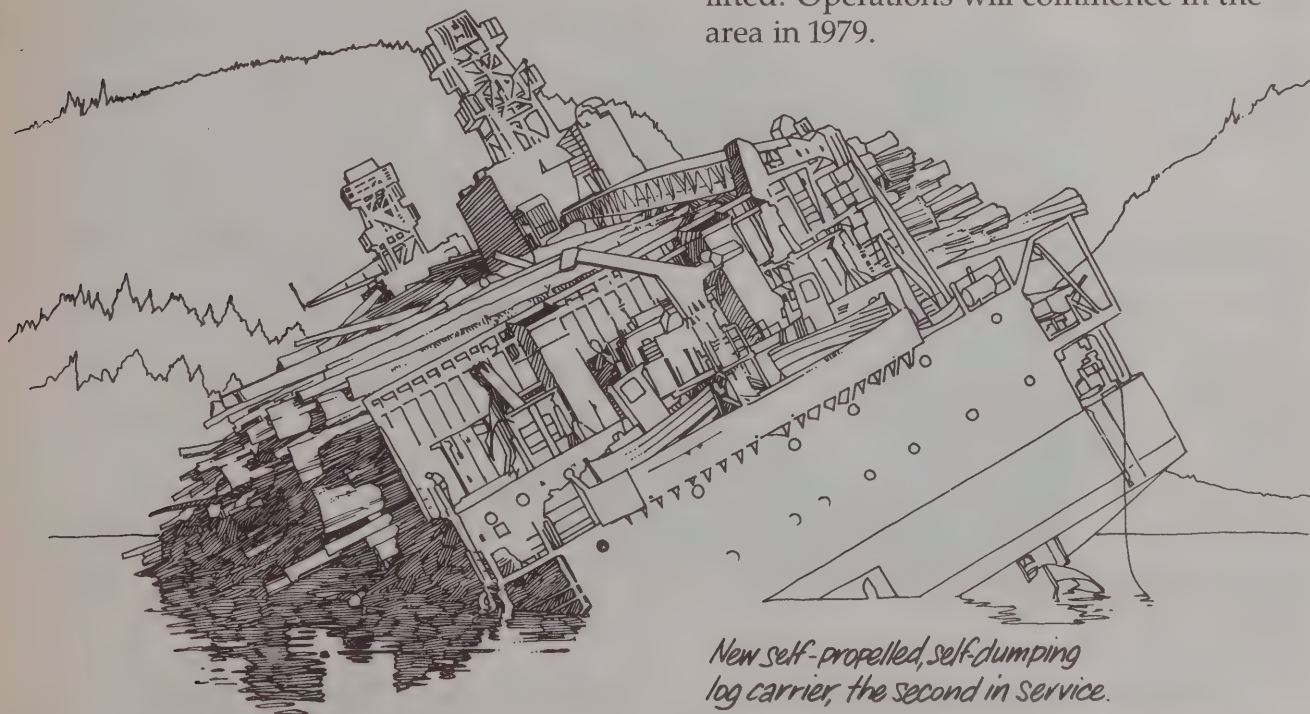
British Columbia logging operations achieved high production levels in 1978. Operating conditions were generally good with a settled labour climate and a relatively open winter. The exception was the summer fire hazard which forced logging to shut down for up to 25 operating days and caused several fires. The most serious was the Moriarty fire at Northwest Bay. It burned 1,500 acres and destroyed felled and bucked timber and logging equipment worth a total of \$1.5 million.

Log production for the year amounted to 4.0 million cunits (3.7 million in 1977) in all operating areas. With favourable market conditions for all species, particularly cedar, log production was sold at progressively higher prices through the year. Successful efforts to increase log

values by improved falling and bucking practices enhanced the effect of higher prices.

Dry land log sorting facilities were extended to five new locations in B.C. during 1978. This system improves log manufacture and makes it possible to sort and grade logs more accurately, so that all grades of raw material are directed to the mill best suited for their conversion. The result is improved value from the log and improved efficiency in the mills. Log transportation received another boost in efficiency in October when a second self-propelled log carrier, the Haida Brave, costing \$13 million, went into service. These carriers can pick up bundled logs at the sorting grounds and transport them to the mills on decks that are high and dry. Loss from sinkage is eliminated.

After an extensive period of study and discussion, the B.C. Government approved a resource development plan for the Tsitika watershed on Vancouver Island. The moratorium on logging, which had been in effect there since 1973, was lifted. Operations will commence in the area in 1979.



*New self-propelled, self-dumping
log carrier, the second in service.*

A full-scale review of the Company's forest management program is underway. An intensive forest management program was first implemented in British Columbia operations in 1962 and at that time it went far beyond industry practices or our own contractual obligations. The present study is directed at improvement of planting stock, matching species to site, site preparation, tending of plantations, genetic tree improvement, commercial thinning, rehabilitation or conversion of low value and low growth stands, and nutrition to increase growth rates. All these measures are aimed at the eventual shortening of tree crop rotations while improving yields and improving timber quality.

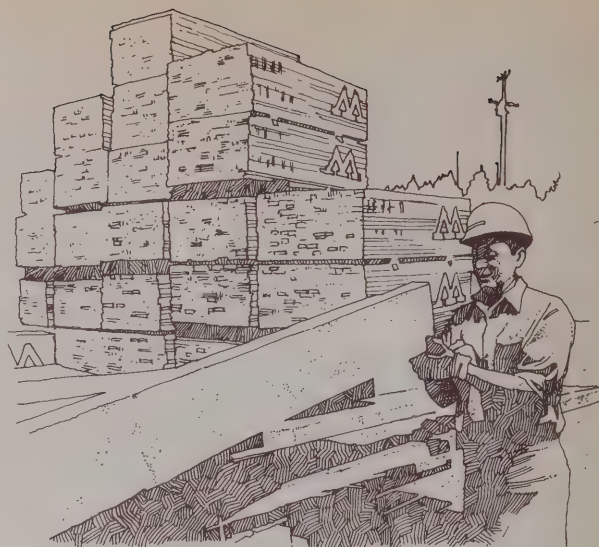
Similar reviews have been completed for MacMillan Rothesay in New Brunswick, MacMillan Bloedel Inc. in Alabama, and Embrasca in Brazil, with a view to improving and intensifying forest management practices to provide the maximum economic contribution from the lands under Company management.

Sales	(millions of dollars)	
	1978	1977
Inter-segment Sales of Logs	\$273.9	\$225.9
Contribution to Earnings	\$39.0	\$11.4

Building Materials

All three major components of the Company's building materials production — lumber, plywood and other panelboards — showed improved shipment volumes and sales values in 1978.

Lumber mills ran well and showed good productivity increases over the previous year. Both the U.S. and other export markets were strong. Lumber specialty shipments from the Mainland Processing Division were up approximately 44% over



Checking fir lumber.

1977, and 83% over 1976, as a result of continuing efforts to increase the economic value extracted from raw material. At Edenton, North Carolina, remanufacturing facilities to upgrade production from the Company's sawmill turned that operation around after several years of losses.

Prices for ASPENITE® panels strengthened in both Canadian and U.S. markets. More than half the Company's production at mills in Hudson Bay, Sask., and Thunder Bay, Ont., is now sold in the U.S. Good demand in Canada also helped push k3® particleboard earnings to record levels during 1978.

Improved productivity and prices enabled the Vancouver Plywood Division to operate profitably during the year. The old "A" mill has been closed and about \$1 million is now being spent on upgrading lathes in "B" mill. A decision on the mill's future will depend on continuing productivity improvements and market conditions. The International Woodworkers of America and the crews at Vanply have been most co-operative during this trying period.

The profitability of the world-wide

distribution of building materials in Canada, the United States, Japan, the United Kingdom and Australia was up

Sales *	(millions of dollars)			
	1978		1977	
Lumber	\$621.5	64%	\$488.7	61%
Panelboards	226.4	24	180.9	23
Other	118.6	12	126.8	16
	\$966.5	100%	\$796.4	100%

Contribution to Earnings	\$67.7	\$19.2
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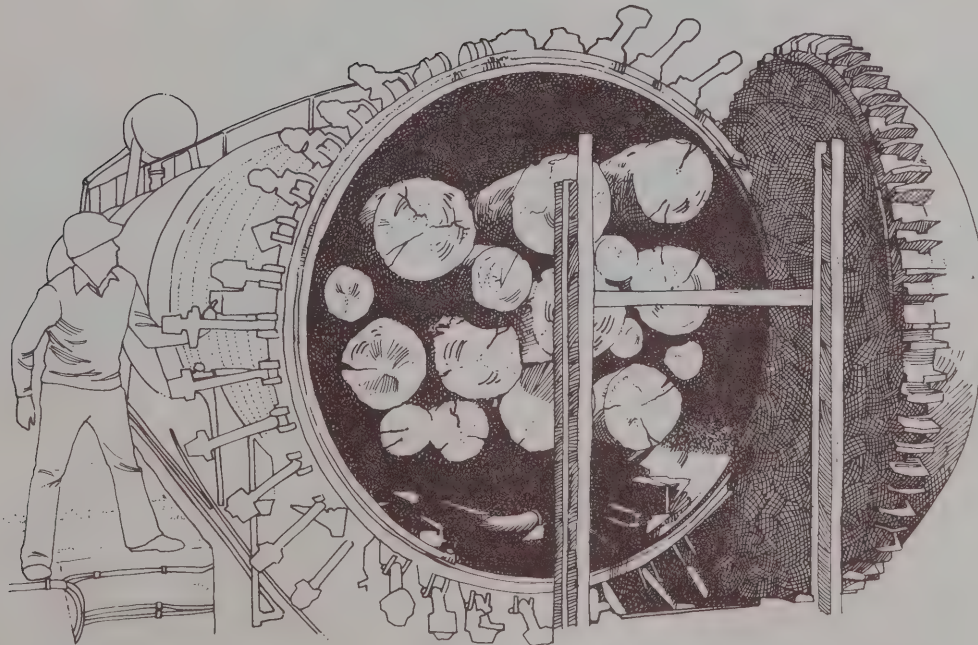
* Sales do not include any amounts for by-products, such as wood chips, transferred to pulp and paper operations.

substantially. Good progress was made in developing an integrated marketing and distribution approach in the U.S. for all Company products including ASPENITE® panels, cedar and dimension lumber from Canada, along with U.S. production from Alabama and North Carolina.

Production			
	1978	1977	Per Cent Increase
Lumber (MFBM)	1,379,499	1,235,759	12%
Panelboards (M.sq.ft. ¾")	985,144	890,433	11

Sales of Building Material Products by Market

	1978	1977	1976	1975	1974
U.S.A.	47%	44%	37%	36%	31%
Canada	27	28	35	38	31
U.K. and Continental Europe	14	15	15	13	22
Japan and Orient	7	8	7	8	8
Other	5	5	6	5	8
	100%	100%	100%	100%	100%



*Cedar utility poles
get preservative treatment.*

Pulp and Paper

Production was maintained at high levels for all products throughout the year but could not keep pace with demand which remained firm. Consequently, a reduction of inventories occurred.

The strong newsprint market, which prevailed towards the end of 1977, was sustained throughout 1978, particularly in the U.S. and Canada. This strong demand was further enhanced by continued growth of our specialty markets.

Sales *	(millions of dollars)			
	1978		1977	
Newsprint	\$463.2	69%	\$385.7	67%
Pulp	161.3	24	143.9	25
Fine Paper	25.9	4	22.4	4
Other	22.1	3	24.2	4
	\$672.5	100%	\$576.2	100%
Contribution to Earnings	\$136.9		\$116.7	

* Before eliminating inter-segment sales of \$15.8 million (1977 \$13.7 million)

Sales of Pulp and Paper Products by Market

	1978	1977	1976	1975	1974
U.S.A.	56%	54%	48%	46%	42%
Canada	10	10	12	11	10
U.K. and Continental Europe	15	18	21	21	23
Japan and Orient	11	10	10	10	12
Other	8	8	9	12	13
	100%	100%	100%	100%	100%

Linerboard and Packaging

In 1978, the first full year of integration of linerboard and packaging operations, sales reached record levels of \$352.4 million compared with \$307.5 million in 1977. Profits were adversely affected by rising costs which could not be fully recovered from increased selling prices. Towards the end of the year, however, linerboard selling prices were increased from the low 1977 level and selling prices of corrugated containers were also increased moderately.

As a result of production curtailments in Scandinavia, as well as through improved demand, world pulp inventories returned to near normal levels. This contributed to the sharp recovery of prices from their depressed levels of 1977 and early 1978. The fine paper plant near Vancouver also had a successful year with both sales and production at record levels.

The outlook for 1979 is for a continuation of the favourable market conditions with some possible slackening towards the latter half of the year. Programs have been implemented to increase output for all products in an effort to meet projected demand for 1979 and beyond.

Production (metric tonnes)

	1978	1977	Per Cent Increase
Newsprint	1,126,521	1,074,555	5%
Pulp	430,655	395,225	9
Fine Paper	33,693	30,748	10

Competition for open market fibre in the immediate area of the Company's Alabama operations increased substantially during 1978 with resulting increases in wood costs. These have risen at an average annual rate of 20% for the past five years. The Company is improving its log handling facilities in order to process tree-length logs and to utilize a larger proportion of less expensive logs. In addition to productivity improvement and cost reduction programs in the sawmills, plywood mill



and particleboard plant, a \$5.6 million modification program on the linerboard machine will increase capacity by 15,000

Sales	(millions of dollars)			
	1978		1977	
Corrugated Containers	\$250.9	71%	\$218.4	71%
Linerboard	81.4	23	72.0	23
Other	20.1	6	17.1	6
	\$352.4	100%	\$307.5	100%
Contribution to Earnings	\$18.1		\$18.9	

metric tonnes annually. A project to increase productivity of logging crews in Alabama through the use of feller-bunchers was also undertaken in 1978.

Production			
	1978	1977	Per Cent Increase
Corrugated Containers (M.sq.metres)	833,803	812,818	3%
Linerboard (metric tonnes)	424,631	410,538	3
Other Products (metric tonnes)	21,761	19,499	12

Transportation

During 1978 the Company shipped from British Columbia to markets around the world a total of 3.2 million long tons of forest products, of which 2.3 million long tons went by sea. About 72% of this volume was transported in vessels controlled through ownership or time charters by the Company and operated by its shipping division, Canadian Transport Company (CTCo).

The losses incurred by CTCo have continued to decline with a reduction in fleet size and the introduction of operating efficiencies. The fleet of owned or chartered vessels was reduced from 577,000 deadweight tons at December 31, 1977, to 427,000 deadweight tons at December 31, 1978. This capacity was supplemented during the year by five vessels chartered in for single voyages.

The four 50,000 dwt Flensburg vessels, which were chartered for eight-year

terms, are efficient forest products carriers, but continue to generate substantial losses because of their high charter rates. This condition is aggravated by the declining value of the Canadian dollar relative to the U.S. dollar and the Deutsche Mark, which are the currencies in which the charters are effectively payable.

In early 1978 the charter market rose somewhat from its depressed levels and maintained moderate strength throughout the year. Its strengthening was supported mainly by increased shipments of grain and crude oil. At the end of the year there remained a substantial worldwide shipping over-capacity. Nevertheless, slightly firmer markets are expected in 1979.

Transportation	(millions of dollars)	
	1978	1977
Revenue from services*	\$ 102.9	\$ 110.4
Loss from Operations	\$ (6.8)	\$(10.9)

* Before eliminating inter-segment sales of \$75.9 million (1977 \$69.1 million)

Transportation (millions of long tons)	1978	1977	1976	1975	1974
Forest products shipped on behalf of MacMillan Bloedel	1.5	1.6	1.6	1.2	2.0
Other cargoes	.8	1.1	1.8	2.8	2.7
Total freight carried	2.3	2.7	3.4	4.0	4.7
Sub-charter revenues (millions of dollars)	\$2.5	\$12.0	\$34.6	\$49.9	\$43.9

Energy and Environment

The Company spent \$7 million on environment and energy-related projects in 1978. The main emphasis was on particulate emissions from power boilers and odorous emissions from kraft mills.

The \$3 million secondary dust collector on Harmac's No. 9 power boiler will bring it in line with provincial objectives for existing power boilers. Powell River Division completed its evaluation of a hog fuel drying and preparation system and is now assessing electrostatic precipitators to reduce power boiler emissions there.

The strong black liquor oxidation system at Alberni Pulp and Paper was completed early in 1978 and those at Harmac and Powell River are scheduled for start-up in 1979. Total cost is \$2 million.

A major move in the area of purchased energy reduction was the commissioning of the \$22 million hog fuel power boiler at Alpulp. At the ASPENITE® plant in Thunder Bay a system was installed during 1978 at a cost of \$1 million to substitute mill waste for natural gas for the heating of the wood flake dryer and the log thaw pond. At Harmac, a computer control was installed on the mill's major power boiler to reduce oil consumption through increased use of hog fuel.

Human Resources

Some 19,000 of the Company's 24,000 employees are covered by 62 collective agreements. During 1978, 25 agreements covering 2,300 employees were negotiated



Mars water bombers... essential to fire protection.

without work stoppages. Major industry-wide negotiations will be conducted in 1979 with the International Woodworkers of America, the Canadian Paperworkers Union and the Pulp, Paper and Woodworkers of Canada in the British Columbia operations. Contracts negotiated in the United States will be subject to the Wage and Price Standards announced by President Carter on October 24, 1978.

Several pilot programs aimed at higher productivity and increased job satisfaction were initiated in B.C. divisions by the Management Development Section. Results in 1978 were very encouraging. The programs involve project teams, divisional management, employees and union representatives. Supervisors are trained in time management, leadership and the economics of the business. Operators learn quality control, waste reduction and safe, efficient work practices.

A major health study has been undertaken at the Company's Powell River Division. This study is sponsored primarily by the Workers' Compensation Board with the co-operation of both union and management. To complement the study, a comprehensive industrial hygiene survey is also underway by Workers' Compensation Board and Company hygienists.

During 1978 there was a new emphasis placed upon the prevention of on-the-job injuries to our employees. As a result there was a 12% reduction in the number of recordable lost-time injuries. Continuing emphasis will be placed on industrial safety and accident prevention.

All U.S. and Canadian pensioners who retired before January 1, 1978 and who were not members of negotiated Industry Pension Plans received pension

supplements effective January 1, 1979.

Research and Development

The Company's Research and Development activities are based on the premise that MB's competitive leadership can be maintained and strengthened through a policy of aggressive technological development. In 1978, R and D efforts were directed towards improved productivity, reduced production and raw material costs, and the development of new and improved products compatible with MB's business goals.

The Company spent \$6.8 million on research and development in 1978. Of this amount, \$600,000 was funded by the Canadian government. The policy of devoting about 80% of the budget to work in support of the development strategies of the Product Groups was continued, with 20% directed towards longer range product and process innovations.

Significant progress was achieved in packaging research, especially in the successful completion of pilot plant trials of a number of coatings, designed to better protect products packaged in corrugated containers.

A high yield pulping process based on cedar chips for use in linerboard has reached advanced development. The Company's leading position in the development and operation of the thermo-mechanical pulping process (TMP) used in the manufacture of newsprint, has been maintained and expanded. This will ensure that the TMP installation that will supply the newly ordered newsprint machine at Powell River will incorporate the most advanced technology for ensuring efficiency and product quality.



Investments

Domtar

The Company now holds 2.8 million, or 18.9 percent, of the outstanding common shares of Domtar, Inc. for investment. There are no negotiations now pending between the Company and Domtar. As far as the Company is concerned, any further transaction between the two companies could only be upon the mutual agreement of both companies and their respective Boards of Directors, and must in any event be entirely satisfactory to the appropriate officials of the various provinces involved as well as the Federal Government. It is impossible to predict at this time whether or when all these conditions might exist.

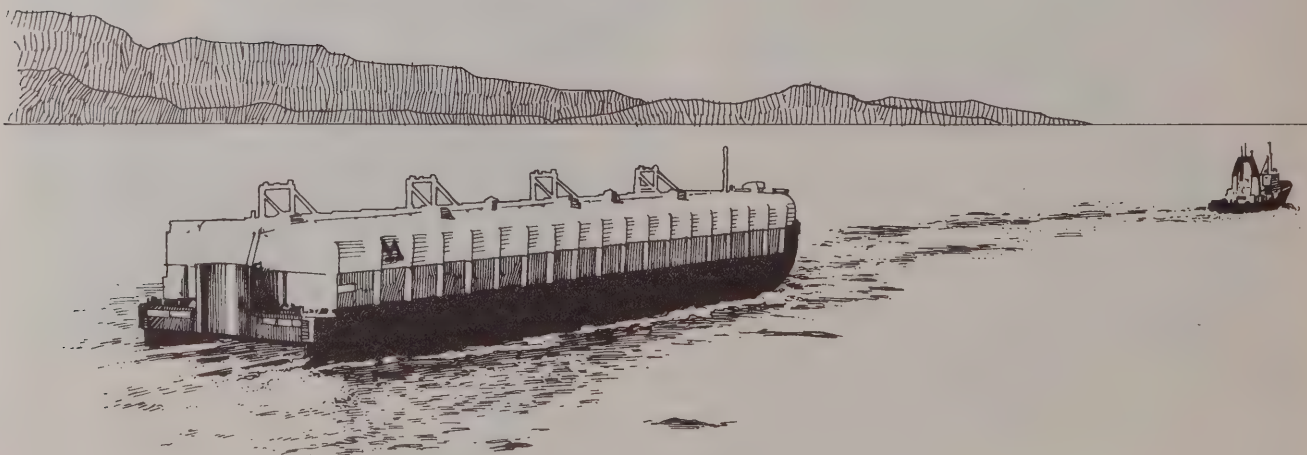
KNP

Until the acquisition of the Domtar shares mentioned above, the Company's largest investment had been its 43.8% shareholding of Koninklijke Nederlandse Papierfabrieken N.V. (KNP). This company is headquartered in The Netherlands and is one of the largest

producers of fine papers in the European Economic Community. KNP also produces paperboard, packaging materials and corrugated cases, and through its 51% ownership in Okto, produces boxboard and testliner. During 1978 European markets for coated groundwood papers continued to be very strong and the demand for KNP's other products showed improvement. This trend is expected to continue during 1979.

Celupal

The Company owns 37.5% of Celupal S.A., a Spanish paper producer located in Algeciras, which operates a fine paper mill specializing in high grade coated papers. A further 37.5% of this company is owned by KNP and the balance of the company is owned by Spanish interests. In 1978, the capital structure of Celupal was strengthened by additional contributions from the principal shareholders. During the year, sales and profits increased moderately and despite considerable uncertainty in the Spanish economy, the outlook for Celupal during 1979 is favourable.



Newsprint barge bound for California.

Financial Overview

Capital Expenditures

During 1978, capital expenditures on property, plant and equipment amounting to \$121.6 million were made primarily on projects which will maintain or improve the level of efficiency and productivity of the B.C. operations. In total \$78.7 million or 65% of the year's capital expenditures were made in B.C., \$7.1 million or 6% were made in the rest of Canada, and \$30.8 million or 25% were made in the U.S. The balance comprised expenditures in other parts of the world where the Company has various smaller operations.

In many cases, the expenditures made in 1978 represent the base for further expenditures required in future years to complete the projects concerned. In all, capital projects which will aggregate approximately \$435 million when completed were approved in 1978. It is anticipated that additional expenditures of approximately \$600 million will be approved over the next four years resulting in a cumulative capital spending program over the five year period to 1982 which will exceed \$1 billion.

Internally generated cash flows provided most of the Company's cash needs in 1978 and will similarly provide most of the requirements for the projected capital expenditure program. However, from time to time, these flows will need to be supplemented by external financing and accordingly, in anticipation of these capital requirements, and having regard to an expected rise in interest rates, it was decided in early 1978 to issue (in the Eurodollar market) U.S. \$50,000,000 of Series K 9¼% sinking fund debentures

maturing in 1993, priced at 99¼% of their par value.

Foreign Exchange

Because of the international scope of MacMillan Bloedel's marketing activities, a very substantial portion of the Company's sales are invoiced in U.S. dollars. In a period such as 1978, which saw a major drop in the value of the Canadian dollar relative to its U.S. counterpart, the higher revenues resulting from the change in the exchange rate have a significant effect on MacMillan Bloedel's earnings. Apart from the effect of translating various balance sheet items, a one cent change in the U.S./Canada exchange rate impacts the net earnings of the Company by approximately \$3 million. The full effect of the higher average level at which the U.S. dollars were converted in 1978 into Canadian dollars, combined with a modest effect from other currency exchange fluctuations, accounted for approximately \$19 million of the increase in net earnings over 1977.

The Company follows a policy of entering into forward exchange contracts whereby it agrees to deliver some portion of its U.S. dollar receipts for a set amount of Canadian dollars at dates up to twelve months in the future. By entering into these contracts, the Company eliminates the risk of the U.S. dollar weakening between the date of purchasing the contract and actual conversion and, conversely, foregoes any gain which might arise from a strengthening U.S. dollar. As at December 31, 1978 MacMillan Bloedel had sold forward U.S. \$467 million at an average rate of \$1.15 Canadian per U.S. dollar.

MacMillan Bloedel has a number of investments in partly or wholly-owned companies in the United States and

MacMillan Bloedel Limited

Net Earnings (Note 1)

MacMillan Bloedel Limited	Year Ended December 31			
Net Earnings (Note 1)	1978	1977	1978	1977
	Sales (Note 3)		Earnings (Note 4)	
Contributions by segment (Note 2):	(millions of dollars)			
Raw materials	\$ 273.9	\$ 225.9	\$ 39.0	\$ 11.4
Building materials	966.5	796.4	67.7	19.2
Pulp and paper	672.5	576.2	136.9	116.7
Linerboard and packaging	352.4	307.5	18.1	18.9
Transportation*	102.9	110.4	(6.8)	(10.9)
	2,368.2	2,016.4	254.9	155.3
Less: Inter-segment eliminations	363.3	309.1	2.9	(1.3)
	\$2,004.9	\$1,707.3	252.0	156.6
Share of profits of other companies in which MacMillan Bloedel has a significant interest (before income taxes)			10.8	3.0
			262.8	159.6
Deduct:				
Unallocated general and administrative expenses (Note 2)			44.9	30.3
Interest expense			32.7	32.3
Corporate (gains) and losses and investment income (Note 2)			3.5	(19.6)
			81.1	43.0
Earnings before income taxes (see reconciliation below)			\$181.7	\$116.6
Division of earnings before income taxes:				
Governments –				
Income taxes** (Canadian Federal and Provincial, United States and various other countries)			\$ 78.9	\$ 53.9
Provision for loss in respect of investment in La Cellulose d'Aquitaine S.A.			—	22.3
Shareholders –				
Share of net earnings belonging to minority shareholders of certain subsidiary companies			1.9	2.0
Remaining earnings belonging to MacMillan Bloedel shareholders:				
Dividends on Class A Preferred shares			3.9	3.7
Dividends on Common shares			20.2	8.5
Reinvested			76.8	26.2
			\$181.7	\$116.6
Reconciliation:				
Earnings before income taxes (as above)			\$181.7	\$116.6
Deduct:				
Current and deferred income taxes (including proportion of income taxes of partly-owned companies)			78.9	53.9
Provision for loss in respect of investment in La Cellulose d'Aquitaine S.A.			—	22.3
Minority interests in net earnings of certain subsidiary companies			1.9	2.0
			80.8	78.2
Net earnings per audited Consolidated Statement of Earnings			\$100.9	\$ 38.4

* Including contributions to earnings from log towing and log barging operations.

** Including deferred income taxes but excluding stumpage, property and sales taxes, and other government taxes which are reflected in the calculation of the contributions from operations.

Notes:

- The financial statements on Pages 19, 20 and 21 have been prepared in simplified form for ease of reading. Formal audited financial statements are in the pocket at the back of this annual report.
- Corporate (gains) and losses and investment income is now shown as a separate item. Certain 1977 figures have been reclassified to conform to the 1978 presentation. Included in the unallocated general and administrative expenses is a provision of \$14.6 million (\$8.9 million net of income taxes) in respect of legal actions and claims. This provision is described in more detail in Note 12 to the audited financial statements.
- Proceeds of sales of wood chips and other residues and of log sales and trades resulting from the need to match log outturn with the requirements of the converting mills are credited against costs of production.
- Contributions to earnings represent sales of products and services less cost of sales, selling expenses and allocated general and administrative expenses. Contributions to earnings contain some approximations and are based on a policy of pricing substantially all inter-segment transactions at market value and on methods of allocating costs which MacMillan Bloedel believes to be reasonable; however, other pricing policies and methods of allocating costs are possible. MacMillan Bloedel believes that this presentation appropriately reflects the relative contributions of the segments.

MacMillan Bloedel Limited

Net Assets

	December 31	
	1978	1977
	(millions of dollars)	
Working capital:		
Net cash and short term investments	\$ 6.9	\$ 40.0
Accounts receivable	236.0	213.6
Inventories	289.8	287.9
Prepaid expenses and miscellaneous	29.6	17.5
	562.3	559.0
Deduct:		
Accounts payable and miscellaneous liabilities	244.1	195.1
Current repayments of long term borrowings	17.2	70.9
	261.3	266.0
Total working capital	301.0	293.0
Add:		
Long term assets:		
Operating plants and equipment (at cost, less depreciation)	589.9	553.9
Timber and logging roads (net of depletion and amortization) and land	120.5	116.0
Investments:		
Investments in companies accounted for by the equity method	66.5	56.7
Investments having quoted market value	76.2	3.1
Other investments	14.8	11.0
Cost of goodwill of businesses acquired less amortization to date	22.8	24.0
Various costs being written off over a number of years	5.6	4.2
	896.3	768.9
Capital employed	1,197.3	1,061.9
Deduct:		
Long term borrowings	341.7	309.8
Deferred income taxes	145.2	116.5
	486.9	426.3
Net assets	\$ 710.4	\$ 635.6
Ownership of net assets:		
Interest of minority shareholders in net assets of certain subsidiary companies	\$ 20.7	\$ 22.7
Balance of net assets belonging to MacMillan Bloedel shareholders		
Class A Preferred	87.9	87.9
Common	601.8	525.0
	\$ 710.4	\$ 635.6

Distribution of Common Shares and Common Shareholders as at December 31, 1978

	Common Shares	Common Shareholders
Canada	19,251,218	15,959
United States	1,931,348	859
Other	78,153	173
	21,260,719	16,991
Share Warrants	456	
	21,261,175	

Source of Funds and Capital Requirements

Year ended
December 31

1978 1977

Source of Funds:

(millions of dollars)

Funds generated from operations	\$200.6	\$137.1
Deduct:		
Dividends on MacMillan Bloedel Class A Preferred shares	3.9	3.7
Dividends paid to MacMillan Bloedel's Common shareholders and minority shareholders of certain subsidiaries	21.5	10.1
	25.4	13.8
Funds generated by MacMillan Bloedel and available for investment	175.2	123.3
Add:		
Proceeds of Class A Preferred share issue less \$25.1 million applied to acquire MacMillan Rothesay preferred shares	—	62.5
Increase (decrease) in long term debt	29.8	(63.0)
Disposal of assets and miscellaneous	9.4	17.2
	39.2	16.7
Total source of funds	214.4	140.0
Capital requirements:		
Short term —		
Increase in accounts receivable, inventories, prepaid expenses and miscellaneous	36.4	55.4
Less: Increase (decrease) in current liabilities other than bank indebtedness	(4.7)	79.4
	41.1	(24.0)
Long term —		
New property, plant and equipment	121.6	77.4
New investments acquired (principally Domtar)	84.8	7.1
	206.4	84.5
Total capital requirements	247.5	60.5
Increase (decrease) in net cash and short term investments	\$ (33.1)	\$ 79.5

New Property, Plant and Equipment

(thousands of dollars)

The total expenditures for the year of \$121,557,000 were grouped as follows:

Raw Materials

Timber in Alabama, road construction and dry land log sorting facilities in B.C. and logging equipment \$ 42,560

Building Materials

Commencement of a new sawmill and a plywood mill modernization program in Port Alberni, B.C., pollution control projects and general improvements to operating facilities 15,850

Pulp and Paper

Install second thermo-mechanical pulping unit at Powell River, B.C., pollution control projects and general improvements to operating facilities 37,250

Linerboard and Packaging

Modify Alabama linerboard machine and general improvements to operating facilities 13,708

Other

Self-propelled log carrier, computer equipment and improvements to operating and head office facilities 12,189

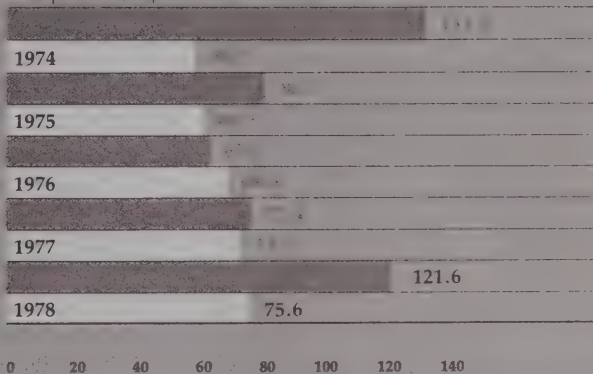
\$121,557

Additions to Property, Plant and Equipment and Depreciation, Depletion and Amortization

(millions of dollars)

■ Additions to Property, Plant and Equipment

■ Depreciation, Depletion and Amortization



MacMillan Bloedel Limited

Impact of Inflation

Present Productive Assets

Historical cost and current cost of acquiring new assets of equivalent productive capacity (Notes 1 and 2)

	December 31			
	1978		1977	
	Replacement Basis	Historical Basis	Replacement Basis	Historical Basis
(millions of dollars)				
Buildings and Equipment:				
Cost	\$3,903.6	\$1,258.3	\$3,474.5	\$1,177.2
Accumulated depreciation	2,109.9	668.4	1,860.8	623.3
Net	\$1,793.7	\$ 589.9	\$1,613.7	\$ 553.9
Depreciation for year	\$ 160.0	\$ 59.0	\$ 142.1	\$ 55.6

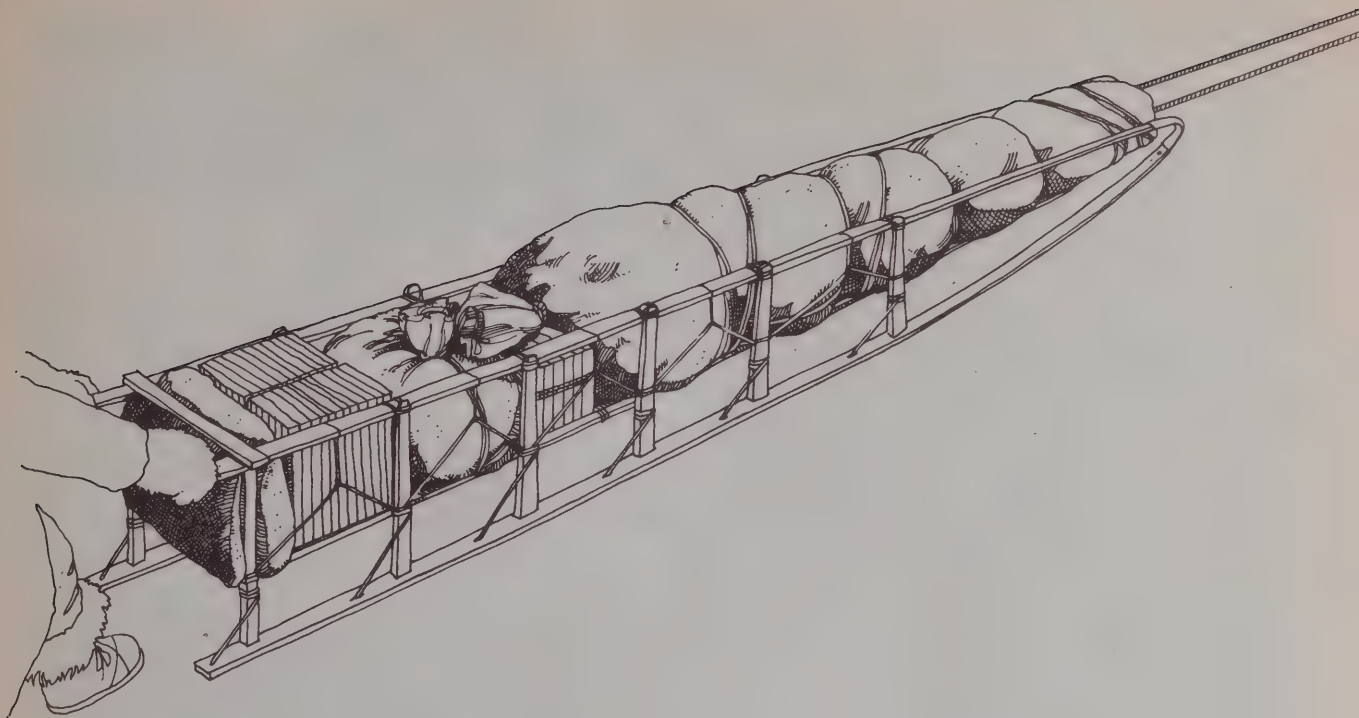
Effects of Inflation on Funds Available to Maintain Present Productive Capacity (Note 2)

	Year ended December 31	
	1978	1977
(millions of dollars)		
Funds generated from operations (as shown in the statement of source of funds and capital requirements)	\$200.6	\$137.1
Funds required to be set aside to finance replacement of productive capacity if no inflationary cost increases had occurred (historical cost depreciation)	59.0	55.6
	141.6	81.5
Additional funds required to finance the inflationary increase in the cost of maintaining present productive capacity		
Inventories (Note 3)	26.9	13.5
Buildings and equipment (Notes 1 and 4)	101.0	86.5
	127.9	100.0
Funds available for distribution or expansion (deficiency) (Note 5)	\$ 13.7	\$(18.5)

Notes:

1. The replacement information is based on the hypothetical assumption that MacMillan Bloedel would replace its productive capacity at December 31, whether or not funds were available to do so or such "instant" replacement were physically possible. Decisions concerning actual replacements will be made with due consideration for economic, regulatory, competitive and technological conditions existing at the time of such determination and could differ materially from the assumptions on which the data is based.
2. The replacement cost of timber and land and logging roads has not been taken into account. In the case of timber it is not practicable to estimate a replacement cost owing to the complex nature of the agreements relating to the timber supply and in the case of land it is not consumed in the production process. Under existing timber harvesting practices active logging roads are considered as not requiring replacement beyond annual maintenance and upkeep procedures until the next timber growth cycle is complete.
3. The increased cost of replacing inventories represents the difference between the historical cost and the current cost of goods sold at the date of sale.
4. The increased cost of maintaining the present productive capacity represents the difference between depreciation determined on an historical cost basis and that determined on the replacement cost of buildings and equipment.
5. The funds available should be evaluated on the basis that they do not take into account improvements in operating cash flows which could result from the replacement of productive capacity based on new technology, economies of scale and other relevant factors.

**Innovation —
key to the future**



Innovation — key to the future

The Labrador sled was made of two long wooden runners connected by cross joints fastened with leather thongs. The Eskimos rubbed the runners with peat and coated them with water which turned to ice, a primitive kind of ski wax. They were engaging in a practice as old as man — improving the utility of wood, making it more efficient.

Today, MacMillan Bloedel follows that tradition, studying every aspect of wood and its fibres, looking at new ways of forming them into useful products that can be sold at a profit.

Some wood products, such as cedar shingles and shakes, are so naturally adapted to their function that it is hard to improve on them and they still look much as they did when they first came into use as a cladding and roofing material. Building timbers haven't changed much over the years but panelboards, pulp and paper and corrugated container design have all undergone change to meet new demands, different end uses. Beyond the products, innovation is particularly apparent in production processes, the raw material harvest and in distribution. The industry hums with change.

As an integrated company, MB makes a full range of wood-based products and its current capital investment program is aimed at both cost reduction and product development, to keep our goods competitive.

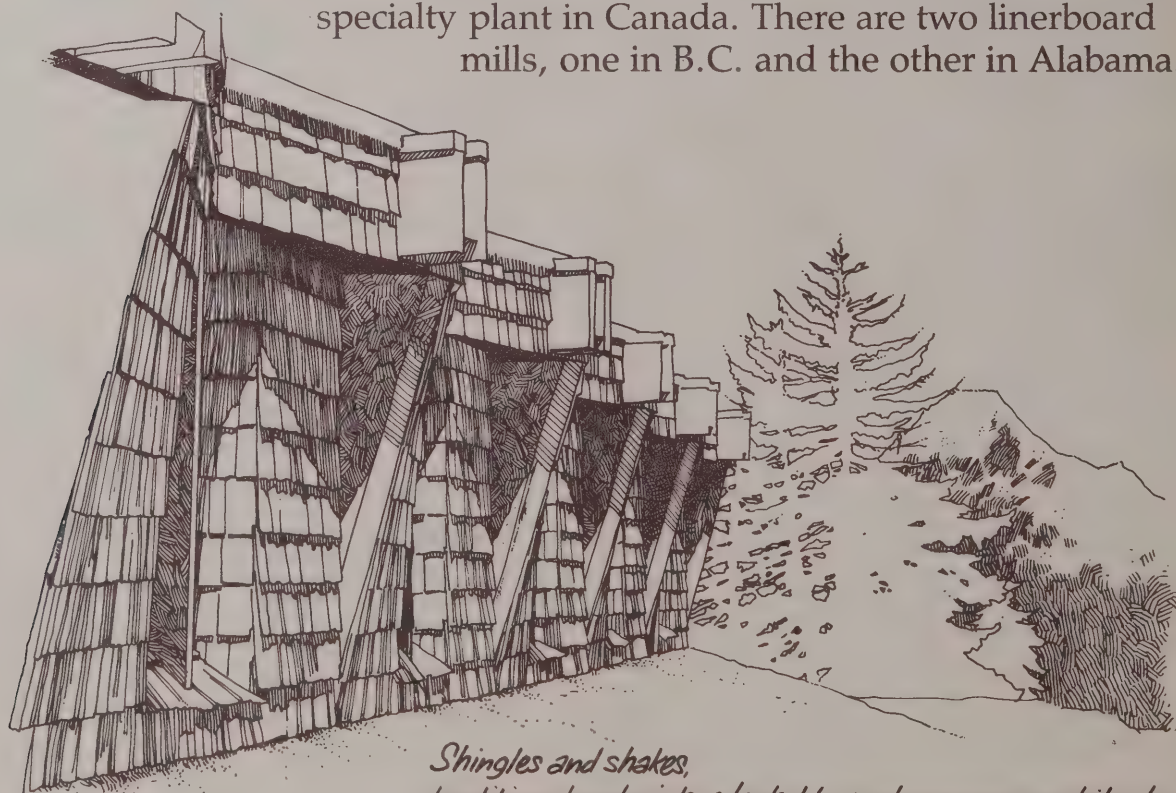
What we produce

The Company has four main product groups — Raw Materials, Building Materials, Pulp and Paper, and Linerboard and Packaging. Working with them is one of the forest industry's most respected research organizations — MacMillan Bloedel Research. Together they constitute a dynamic team attuned to new ideas in forest regeneration, production processes, harvesting, in products and in marketing.

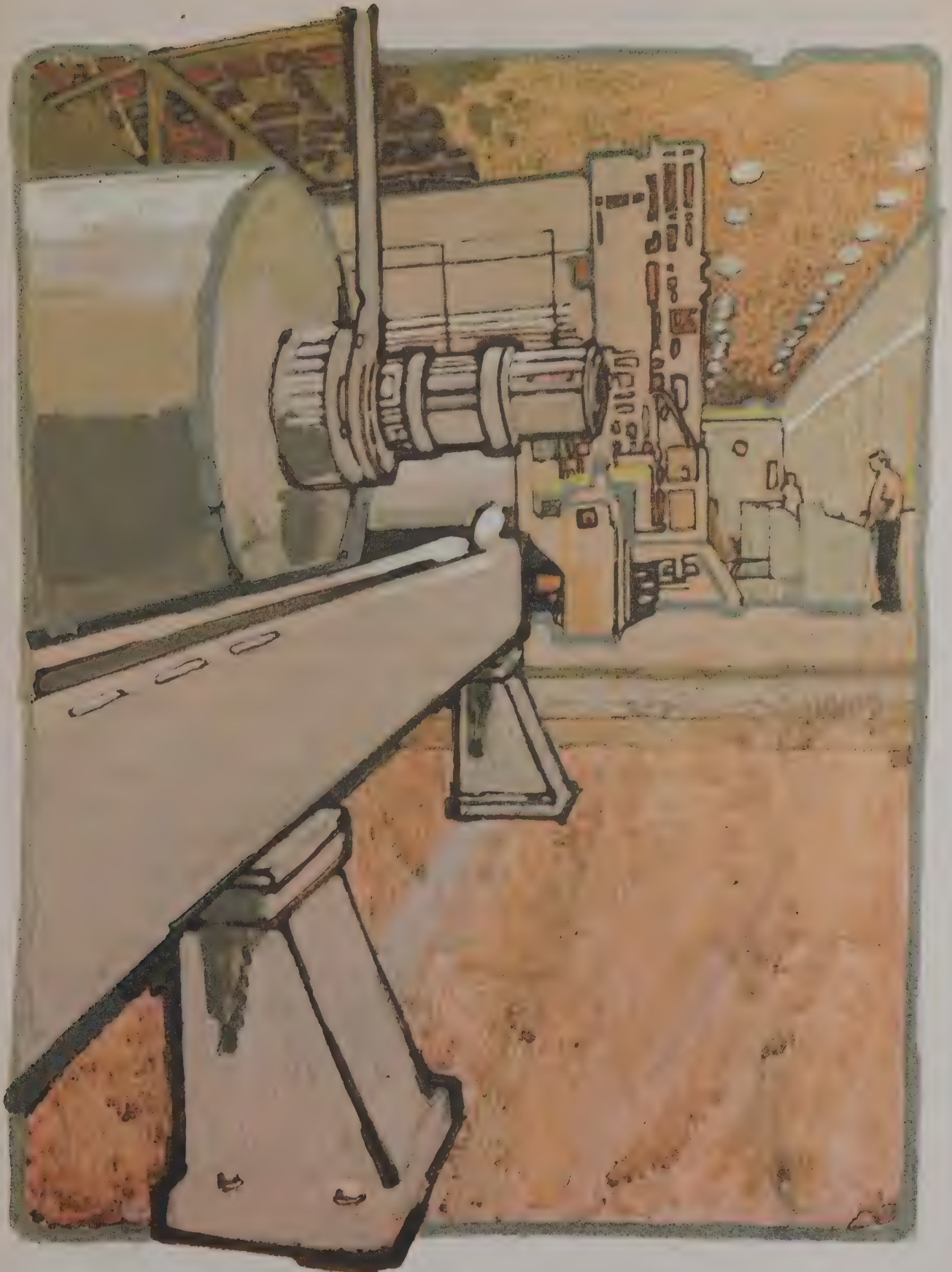
The Building Materials Group produces lumber at eleven mills in British Columbia and Alabama. There are four plywood mills in B.C., Ontario and Alabama, and two mills, in B.C. and Alabama, where particleboard is also made. At Hudson Bay, Saskatchewan, and Thunder Bay, Ontario, the Group manufactures waferboard panels under the trade name ASPENITE®. Wood specialties, shingles, shakes, panelboard specialties and mouldings are also produced in Canada.

The Pulp and Paper Group makes newsprint and groundwood specialty papers at Port Alberni and Powell River in B.C. and at Saint John, New Brunswick. Market pulp comes from three MB mills in B.C., where the Company also has a fine paper operation.

The Linerboard and Packaging Group includes 23 corrugated container plants in Canada, the United States and the United Kingdom, and a bag and specialty plant in Canada. There are two linerboard mills, one in B.C. and the other in Alabama.



*Shingles and shakes,
traditional materials adapted to contemporary architecture.*



Much more than news

The nature of the newsprint we manufacture is determined primarily in just one place — the pressrooms of the world — and there technology is advancing rapidly. The publishing industry takes space-age techniques, such as facsimile transmission of printed material by satellite, and quickly adapts them to the marketplace. For their high-speed, automated presses publishers demand newsprint with strength, brightness, stability and what is called “runability”. In fact, the demands are now so sophisticated and diverse that the term “newsprint” doesn’t quite suffice. A more accurate description is “groundwood communications papers” because much more than news is printed on them.

MB has been making groundwood papers for about 65 years. The Company’s mills at Powell River and Port Alberni in British Columbia can produce some 865,000 metric tonnes a year. The MacMillan Rothesay mill at Saint John, New Brunswick, has a capacity of 308,000 metric tonnes per year.

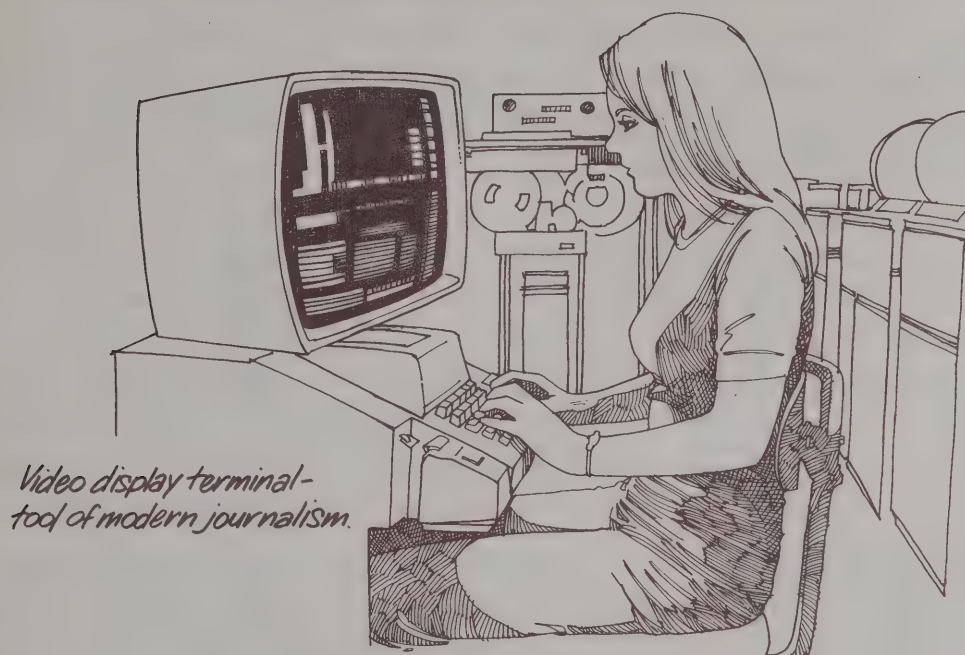
From the beginning, our reputation as a papermaker has depended on how well we understood our customers’ needs and adapted the product to them. Our sales staff spend much of their time in pressrooms learning how our papers work in newer printing processes such as DiLitho and shallow relief. MB Research in Vancouver operates a printing laboratory which tests such processes on our products and thus speeds the introduction of specialty papers to the market. The laboratory also helps us make paper quality adjustments more quickly.

In the past, when the offset process began to replace raised metal type in many pressrooms, MB anticipated the trend and was able to offer publishers an offset sheet superior to any in the trade at that time. With offset, ink is transferred to paper from a rubber cylinder and the paper’s surface strength is important to print quality.

For the rotogravure printing industry, MB papermakers developed Electratone, a specialty grade now widely used in newspapers, weekend supplements, advertising brochures and unbound catalogues. It is ideal for fine roto printing yet it can be produced at speeds almost as fast as standard newsprint. Therefore, its cost is less than that of conventional “rotonews”. (This report is printed on Electratone.)

As mailing costs continue to rise, printers and publishers have become interested in lighter weight newsprint grades and MB 40-Gram was developed to fill that need. It is used for catalogues, flyers, directories and mailers. Its brightness and finish are the same as standard newsprint.

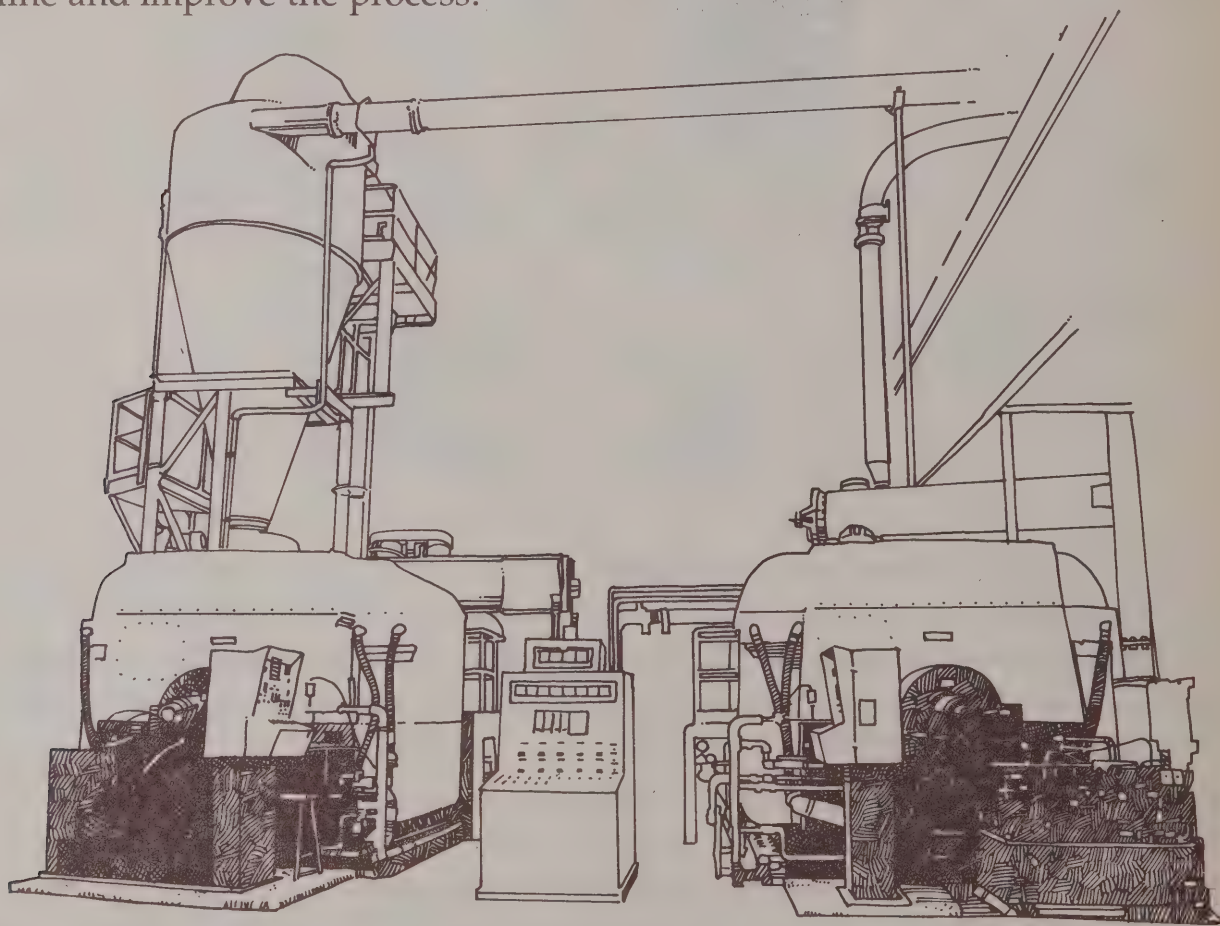
Still a lighter grade of communications paper is Telephone Directory, sold to telephone companies around the world in both white and canary rolls. Our long west coast wood fibre gives remarkable runability on this grade, sometimes better than on grades twice the weight.



Finally there is Computone, a groundwood printing paper produced specifically as computer print-out stock. It represents the application of fine paper technology to newsprint fibre, and it works. The runability, punching, perforating and folding characteristics are the same as for papers containing no groundwood. There is no tendency to curl and refold.

The race to keep up with new technology never stops. Print media are booming everywhere. But what about the future? What about the challenge of electronic news? Already newspapers are changing their approach to readers. As electronic media supply large volumes of spot news, many newspapers are moving to fill the need for more interpretive reporting, more colour illustrations of a clarity to rival the video image, more local and personal coverage and leisure-oriented news. They will require high quality paper at low cost for this magazine-like trend. It may be that huge classified sections in metropolitan dailies will be printed on a lighter sheet than the rest of the paper to save weight. We can expect to see an increasing use of inserts in newspapers, large rotogravure sections. Our technologists and scientists are aware of these trends and forecasts. Today they are developing the stock for newspapers of the 1980s.

In the past 50 years one technological advance stands out as singularly important for papermakers in meeting the advances of printing technology. That was the development of the thermo-mechanical pulping process, universally referred to as TMP. The brainchild of a Swedish researcher, Arne Asplund, it dates from the 1930s but years of development work took place in Sweden, Canada and the United States before its full potential began to be realized. By 1974 there were only four mills using the process, and MB's mill at Powell River was the first major commercial TMP installation in North America. We have been, and still are, an important participant in efforts to refine and improve the process.



Thermo-mechanical pulping, a development of the Seventies.

Newsprint is made according to a recipe. Wood reduced to pulp by chemical means is combined with pulp made by mechanical processes. The proportions depend on the grade of newsprint being made. The chemical pulp is added to give strength to the sheet. Mechanical pulps are usually refiner groundwood and TMP is the second generation of that method. As its name implies, it involves the application of heat to wood chips and other wood residues, in this case steam heat to about 135°C.

Refiner mechanical pulp, made with counter-rotating metal disc refiners rather than with the old grindstones, was introduced in the late fifties. TMP is, for the most part, a development of the seventies and its further improvement into the eighties is assured as the promise of major savings justifies continued research and development. The principal saving comes from the substitution of high-yield, lower cost TMP for low-yield, higher cost chemical pulp.

MB continues to play a central role in this. At Powell River, the Company has done considerable work on the design of the cutting face of the refiner discs to produce fibres of optimum quality. We are also studying the addition of chemicals to TMP to get some of the strength of chemical pulp while retaining the economy of mechanical pulp. We have separated thermo-mechanical pulps into groups according to fibre lengths in research to improve quality in two main areas of great importance to printers — lintability and runability. If there is too much release of material from the surface of the sheet (called lint) it causes difficulty with the ink system in the pressroom. If a sheet tears frequently while running at high press speeds, it lacks runability and results in costly down time.

Even at its present stage of development, TMP has radically altered the economics of the pulp and paper industry. It enables us to use cheaper and more readily available fibre. In addition, we expect that we shall be able to reduce the chemical pulp content of newsprint to 15% or below on the Pacific coast. TMP is a very high yield pulp and if we can use more of it as a substitute for chemical pulp it, in effect, gives us added chemical pulp capacity without the enormous cost of a new plant which that process involves. In addition, because it yields a high percentage of pulp from the wood furnish, it in effect extends the forest resource itself.

However, it must be borne in mind that the advantages which TMP gives to MB are also available to our competitors so our efforts towards raw material cost reduction and improved operating efficiency must go forward on several fronts.

Computers in the mills

A major drive is underway to apply advanced computer technology to our paper machines, chemical and mechanical pulp operations, sawmills and power boilers. On the pulp and paper side, MB's plans call for a uniformly high level of control and instrument sophistication in all its mills by 1985.

Newsprint for today's pressrooms needs precision production methods and only advanced technology combined with close attention to detail can

supply it. As the paper web races along the papermaking machine at speeds of 3000 feet per minute, computers will electronically control the basis weight, the moisture content and the thickness of the sheet. We are working on the application of new sensors that will measure several other characteristics of the production process, including the surface smoothness of the paper and related printing properties.

Computers have been put to work to improve and control the quality of our thermo-mechanical pulp, thereby giving us better newsprint. On TMP Line No. 1 at Powell River, a computer controls the flow of water and energy to the disc refiners so that they produce pulp with optimum papermaking properties. It also controls the "freeness" of the pulp, that is the rate at which water drains away from it. The aim is to get the utmost production from the equipment, within its design limits, without sacrificing quality. It is this process of continual fine tuning that humans could never hope to perform without computer assistance.

Computer controls engineered for the batch digesters reduce energy consumption and, at Harmac, increase the yield. Variations in pulp quality are minimized.

The story is repeated at the Alpulp and Harmac power boilers and the Powell River recovery boiler, yet the list of possible, profitable uses of computers has scarcely been started. We are now doing background work for the computerized flow of information on a mill-wide basis linking all units of the manufacturing process. This flow of data will be connected ultimately to the Company's central business and market invoicing computer system. We are looking towards a video-based plant communication and control system that will in itself give us a measurable increase in productivity.

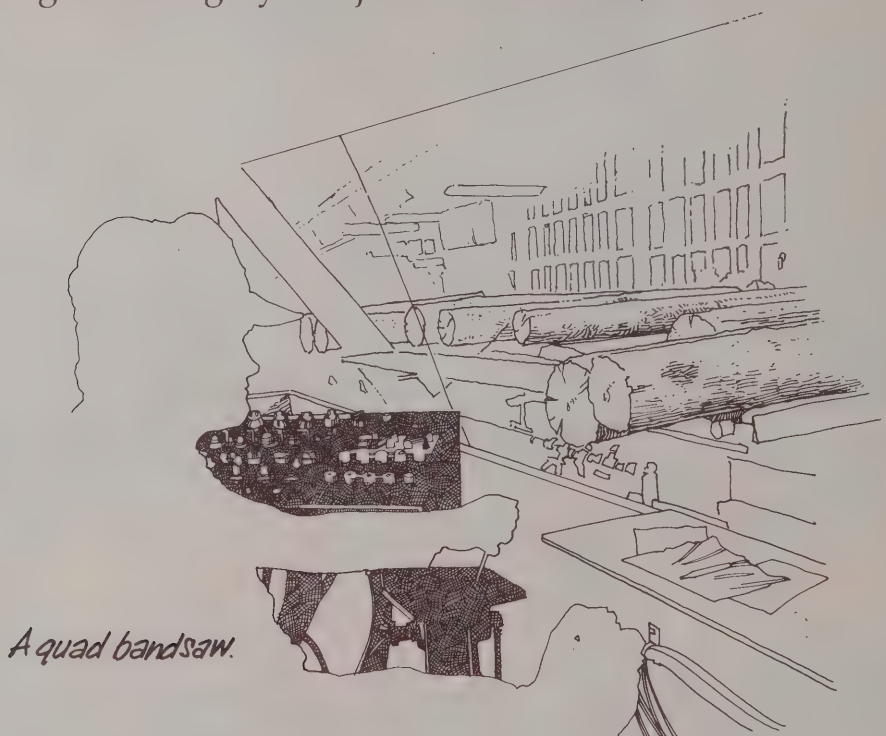
On the Building Materials side, a computerized infeed at the new sawmill under construction in Port Alberni will scan and position each log as it arrives at the bandsaw so that the operator can make the most productive decisions on the best face of the log to cut. This critical first decision will allow us to obtain the maximum value from each log.

Productivity, recovery, flexibility

The new Port Alberni sawmill will, in fact, be as advanced as any of its type in North America. It will feature, when completed in 1980, a conventional headrig combined with a log quad bandsaw as the two primary break-down units. It will have the latest sawmill technology and will emphasize recovery, productivity and sawing flexibility.



It is especially designed to deal with a range of log sizes and shapes. It will have two 60-ton bundle sidelifts capable of handling both 15-cunit bundles and loose logs. There will be two log-bucking stations with log scanners to record log data and assist the cutoff saw operator in bucking logs to length. Packaging facilities will include a lumber end-squeeze unit, automatic strapper, package doubler and anti-stain dip tank. The facility will increase the volume of lumber available for shipment and allow the mill to manufacture a greater proportion of its output in small cuttings which are a premium common grade category. Project cost is about \$55 million.



Nearby, at Alberni Plywood Division, more than \$22 million is being spent to modernize the plywood mill, to reduce its costs and enable it to produce a broad line of plywood products at competitive prices. In addition, the mill will be able to utilize small diameter logs, to convert a growing proportion of species other than fir. Alply is ideally situated to take advantage of overseas market opportunities.

Here again, the technology will be the latest available. Barked blocks will be processed through newly installed hot water conditioning vats. These are necessary in areas of the world where wood comes to the mill frozen solid, but on the coast there are other benefits. The vats also increase lathe production, veneer recovery and the development of wide sheets.

Our studies show that all the growth in markets for plywood will be in multi-sheathing, sanded and unsanded grades.

ASPENITE[®], a position of leadership

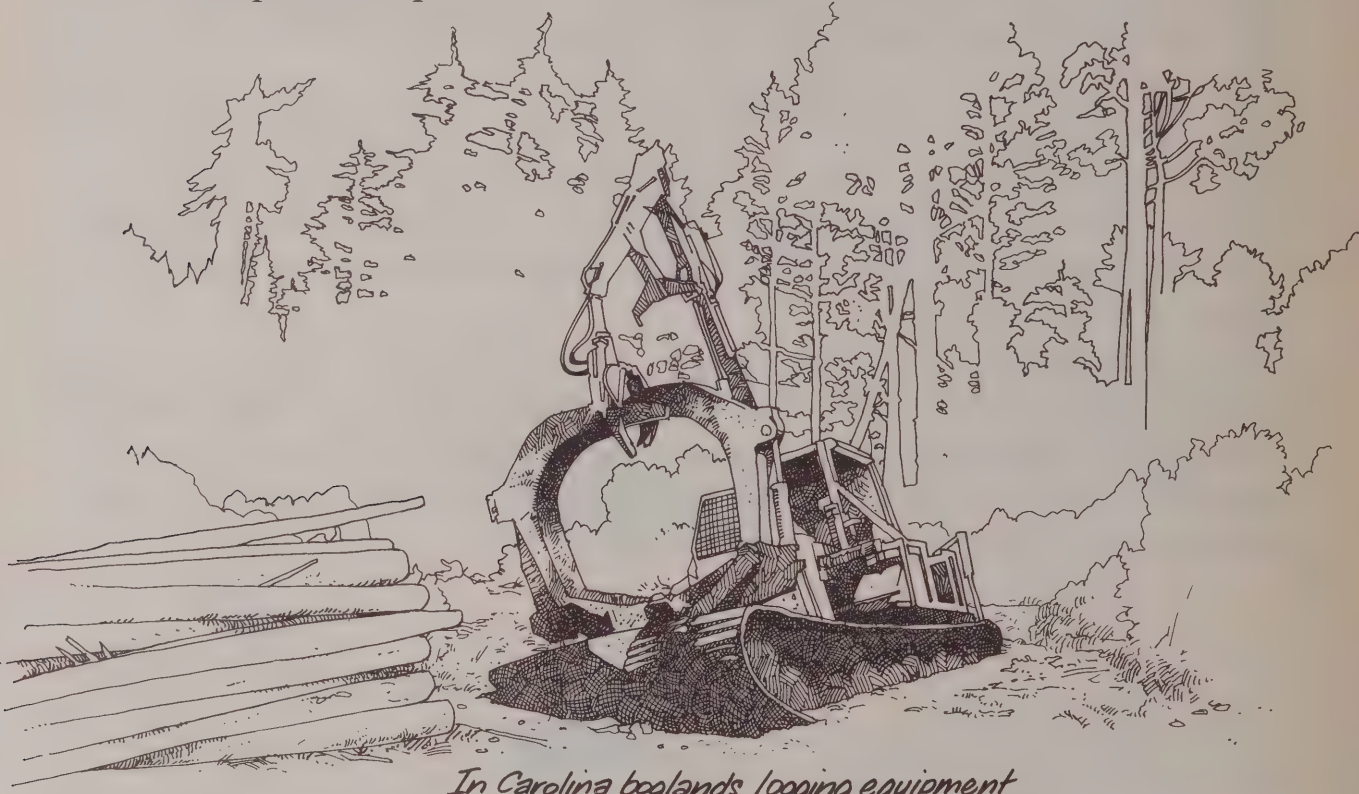
The Company intends to maintain its leadership in the manufacture of waferboard which it markets under the trade name ASPENITE[®]. We are moving in several areas of cost reduction and product development. We have succeeded in substituting a portion of the powdered resin used in the process with lower cost liquid resin and we now use some poplar and birch wafers in addition to aspen. We are already selling, in selected markets, an ASPENITE[®] panel called FLORDEK[®] which is a tongue-and-groove subflooring and combined subflooring-underlay.

The ASPENITE[®] panel as it is now produced has equal strength across the board and lengthwise. However, work is going ahead to increase the longitudinal strength of waferboard panels by orientation of the 1½-inch long wafers, that is, by placing them in layers of alternating direction rather than in random directions as is now done. Orientation will also lighten the weight of the panel.

A combination of marketing and innovative harvesting has brought another premium building material to market in the form of Atlantic whitecedar. It is an exceptionally beautiful cedar for sidings, panelling and fencing board manufactured by the Company's Atlantic Forest Products Division in North Carolina.



Atlantic whitecedar grows in bog land where the water table is just six inches to two feet under the surface. Soft peat goes down 10 feet or more. To make the species a viable timber resource, it was necessary to devise amphibian logging equipment — feller-bunchers and skidders all equipped for bog flotation. Despite the disadvantages of such terrain, the Company is now able to offer the construction and home improvement industry an assured supply of an unusual and sought-after building material that commands a premium price.



In Carolina boglands, logging equipment fitted with flotation gear is used to harvest Atlantic whitecedar.

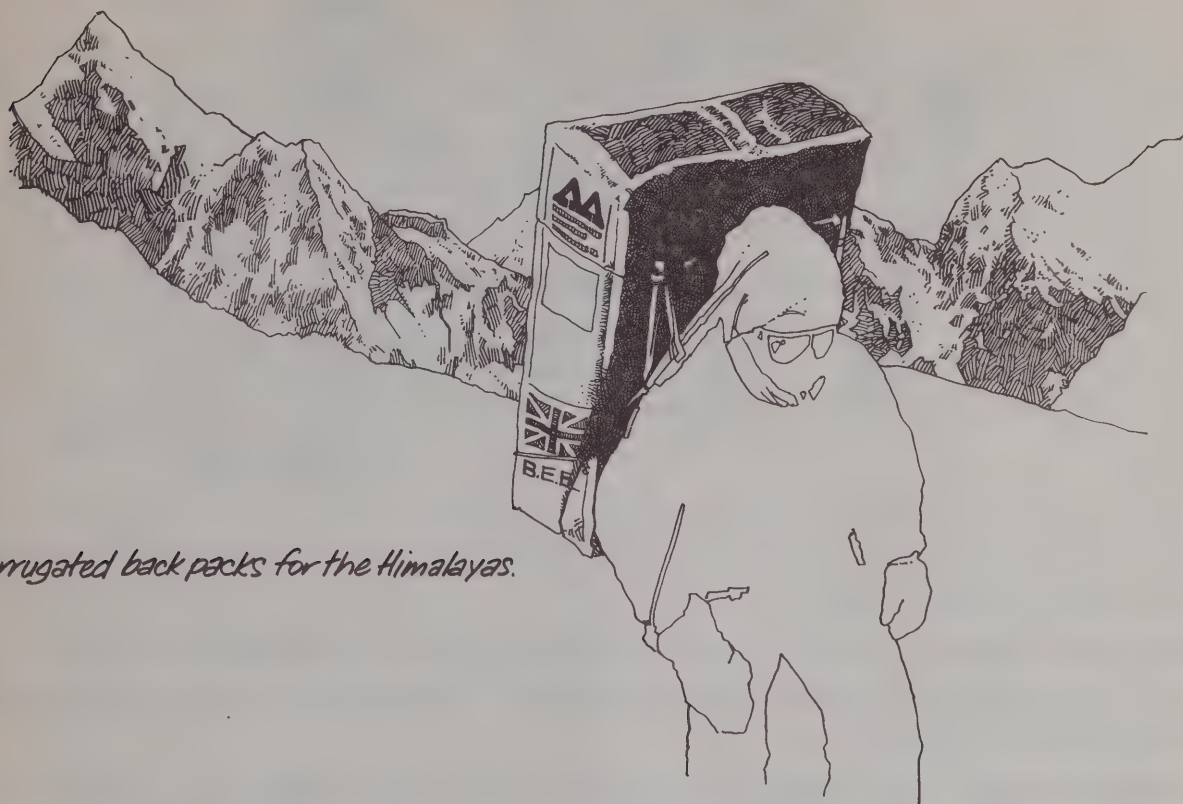
Strawberries to falcons

Probably some of the most inventive thinking in the Company goes into the design and marketing of its corrugated containers, a fiercely competitive industry that is also intimately tied to the needs of the end user. The game goes to the producer whose designs best suit the customers' needs at the lowest possible cost, so cost reduction and design innovation are the cardinal principles of the business which lead to unexpected customers. For example, we are an important producer of strawberry trays in California where we have a patent on the best design in the industry. In England we sell containers to falconers for the transport of their birds of prey to international competitions. We supplied lightweight corrugated back packs to two Himalayan expeditions, one Canadian, one British. As the units were



Logging, one phase of total resource utilization.

biodegradable, they could be left on the mountain when they were empty, the MB linerboard disappearing into the Himalayan snow.



Corrugated back packs for the Himalayas.

The Company has moved quickly to take advantage of the demand for point-of-sale display structures and packaging for retail goods where colourful graphics and great visual appeal are an important part of the sales effort. To stake out a position of leadership in this area, MB researchers have stressed coating capability for corrugated containers so that they can be imprinted with striking graphic designs. One of our U.S. plants is the first in the industry to develop an ultra-violet system for curing and drying inks in colour graphics, a major step in cost reduction.

Not to neglect function, research scientists are providing our corrugated containers with purpose-designed facings. Containers that will hold fine furniture, for example, will be made with a non-abrasive interior coating. Water and grease resistant facings will make a corrugated container suitable for wet foods, chemicals and any number of industrial products that must be protected from moisture. Structural design is more important than coatings, facings or visual appeal in containers that must do heavy duty. Bulk bins capable of holding up to a ton of such materials as petroleum-based resin pellets are now feasible if they are designed to derive more strength from their form than from the wood fibres they are made of.



Customer needs determine packaging design.

Far from the test-tube

The cost of fibre means research into the cheapest, most effective way of harvesting and transporting the raw material. Logging. It is, of course, basic to all the product groups.

Seldom thought of as a research-oriented part of the industry, logging is the centre of renewed interest as just one phase of total resource utilization. At MB, logging methods are now included in overall research and development effort.

One concept under study involves new ways of managing the movement of timber from the setting where it was felled to the main logging road. Research in this area is based on the premise that our wood costs on the B.C. coast are too high, both in competitive and real terms. We are looking for a reduction of road mileage and in the overall cost of road construction, as well as lower equipment and operating costs. The concept involves reduced overheads and more effective supervision and it will also make marginal and previously uneconomic timber profitable. While the success of this program will depend on the development of new equipment, it does indicate the direction of thinking at a time when raw material costs are high and conventional methods must be questioned and challenged.

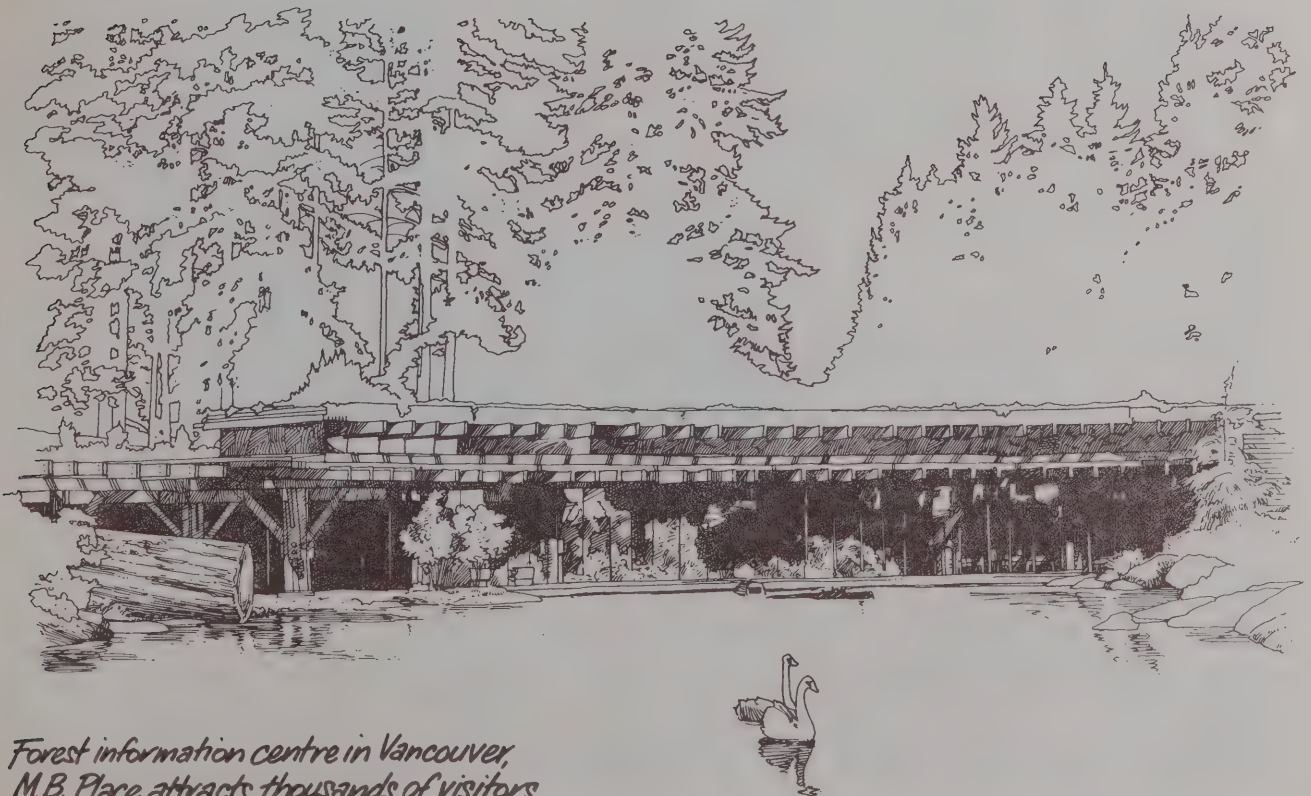
Even the faller is departing from tradition as he uses new techniques to prevent log breakage on hillsides and broken ground. A line shot over a tree with a converted harpoon gun and attached to a winch hauls over the tree against the slope of the hill. Hydraulic jacks, set in a cut on the trunk

prepared by the faller, are used to direct the fall. Metal bands strapped around the trunk reduce breakage on impact with the ground. It is research far removed from the test-tube, but it is research just the same.

Recent studies produced for the Food and Agricultural Organization of the United Nations indicate a number of favourable factors for the future growth of MB's key products. Demographics in the developed economies, our major markets, are particularly encouraging during the '80s. Furthermore, no lasting or major shortages of raw materials are envisaged during the decade.

While the stage may be set for firm markets, the international market place where we sell our goods remains fiercely competitive. MacMillan Bloedel knows what it has to do. It must maximize the value extracted from the log by being cost effective at every stage in its harvest and conversion and by effectively deploying its efforts in the markets of the world.

Innovation is the key. The questioning and the challenging continue in every phase of our business. MB people at work in the field and in the laboratory reflect the Company's confidence in the future and in our ability to meet its challenges.



*Forest information centre in Vancouver,
M.B. Place, attracts thousands of visitors.*



MacMillan Bloedel Limited Head Office: 1075 West Georgia Street, Vancouver, B.C. V6E 3R9

Operations, Sales Offices and Distribution Centres

Woodlands Divisions, B.C.

Cameron
Chemainus
Estevan
Eve River
Franklin River
Hecate
Kelsey Bay
Kennedy Lake
Menzies Bay
Northwest Bay
Port McNeill
Queen Charlotte
Sarita
Shawnigan
Sproat Lake
Squamish
Stillwater

Wood Preserving and Pole Manufacturing New Westminster, B.C.

Lumber

Chemainus, B.C.
Harmac, B.C.
New Westminster, B.C.
Opelika, Alabama
Pine Hill, Alabama
Port Alberni, B.C.
Powell River, B.C.
Vancouver, B.C.

Plywood

Nipigon, Ont.
Pine Hill, Alabama
Port Alberni, B.C.
Vancouver, B.C.

ASPENITE* Panels

Hudson Bay, Sask.
Thunder Bay, Ont.
*Registered Trade Mark

Particleboard

Pine Hill, Alabama
Vancouver, B.C.

Wood Products

Specialties

Canada

New Westminster, B.C.
Lumber Specialties
Port Alberni, B.C.
Western red cedar
Shingles and Shakes
Lumber Specialties
Toronto, Ont.
Mouldings
Vancouver, B.C.
Panelboard Specialties
Pres-to-logs

United States

Edenton, N.C.
Wood Fencing
Lumber Specialties

Newsprint and Groundwood Papers

Port Alberni, B.C.
Powell River, B.C.
Saint John, N.B.

Pulp

Harmac, B.C.
Bleached Sulphate
Semi-bleached Sulphate
Port Alberni, B.C.
Unbleached Sulphate
Powell River, B.C.
Semi-bleached Sulphate

Other Paper and Board Products

New Westminster, B.C.
Fine Papers
Pine Hill, Alabama
Linerboard
Port Alberni, B.C.
Linerboard
Bellevue, Washington
Secondary Fibres

Corrugated Containers

Canada

Winnipeg, Man.
Regina, Sask.
Edmonton, Alta.
Calgary, Alta.
New Westminster, B.C.

United Kingdom

Hatfield, Herts.
Irvine, Ayr.
Nelson, Lancs.
Southall, Hanwell
West Auckland, Co. Durham
Weston-super-Mare, Avon

United States

Elmira, N.Y.
Jersey City, N.J.
Union, N.J.
Odenton, Md.
Cleveland, Oh.
Centerville, Oh.
Marion, In.
Chicago, Il.
Magnolia, Ms.
Little Rock, Ar.
Houston, Tx.
Carson City, Ca.

Cartons

Burnaby, B.C.
Folding and Rigid Cartons
Milk Cartons
Specialty Cartons

Bag and Specialties

Burnaby, B.C.
Kraft Paper Bags
Notion and Millinery Bags
Wrapping Papers

Plastic Products

High Wycombe, England

Sales Offices and Distribution Centres Building Materials

Canada

MacMillan Bloedel Building Materials

Dartmouth, N.S.
Moncton, N.B.
Drummondville, Que.
Montreal, Que.
Noranda, Que.
Quebec City, Que.
Rimouski, Que.
Belleville, Ont.
Chatham, Ont.
Fonthill, Ont.
Kitchener, Ont.
London, Ont.
North Bay, Ont.
Orillia, Ont.
Ottawa, Ont.
Owen Sound, Ont.
Sault Ste. Marie, Ont.
Sudbury, Ont.
Thunder Bay, Ont.
Timmins, Ont.
Toronto, Ont.
Winnipeg, Man.
Regina, Sask.
Saskatoon, Sask.
Calgary, Alta.
Edmonton, Alta.
Lethbridge, Alta.
Chemainus, B.C.
Port Alberni, B.C.
Vancouver, B.C.
MacMillan Jardine (North America) Limited
Vancouver, B.C.
Hardwoods

United States

MacMillan Bloedel Building Materials
Walpole, Ma.
Wayne, N.J.
Camden, N.J.
Baltimore, Md.
Fort Lauderdale, Fl.
Jacksonville, Fl.
West Hartford, Ct.
Atlanta, Ga.
Houston, Tx.
Portland, Or.

Robert S. Osgood, Inc.
Los Angeles, Ca.
Hardwoods

United Kingdom

MacMillan Bloedel Meyer Limited
London
MacMillan Bloedel Panelboard Agencies Limited
London

Australia

MacMillan Bloedel Pty. Limited
Sydney, Melbourne

Orient

MacMillan Jardine Limited
Hong Kong, Tokyo

Pulp and Paper

Australia

MacMillan Bloedel Pty. Limited
Sydney, Melbourne

Canada

MacMillan Bloedel Limited
Vancouver, B.C.

Orient

MacMillan Jardine Limited
Hong Kong, Tokyo, Singapore, Malaysia and Thailand

United Kingdom and Europe

MacMillan Bloedel Europe B.V.
Paris, Antwerp
MacMillan Bloedel Pulp and Paper Sales Limited
London

United States

MacMillan Bloedel Sales Inc.
Stamford, Ct.
Powell River-Alberni Sales Corporation
Seattle, Wa.; San Bruno, Pasadena, Ca.
Star Terminal Company, Incorporated
San Francisco, Long Beach, Ca.

Directors

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Seattle, Washington, U.S.A.
Chairman, Powell River-Alberni
Sales Corporation

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Vancouver, British Columbia
President, Montrose Development
Ltd.

G. H. D. Hobbs

Vancouver, British Columbia
Chairman, Cominco Ltd.

J. N. Hyland

Vancouver, British Columbia
President, Granduc Mines,
Limited

C. C. Knudsen

Vancouver, British Columbia
President and Chief Executive
Officer,
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Montague L. Meyer Limited

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President and Chief Executive
Officer,
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J. P. R. Wadsworth

Toronto, Ontario
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C. B. Wright

Seattle, Washington, U.S.A.
Private Investor

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Vancouver, British Columbia

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Vancouver, British Columbia

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D. B. Turner
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R. N. Wiewel
Vice-President, Marketing,
Pulp and Paper

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Chief Forester

F. H. Britton Q.C.
Vice-President and General
Counsel

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Vice-President, Administration

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Planning and Analysis

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Corporate Communications

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F. H. Moonen
Vice-President, Government
Affairs

J. S. Rogers
Vice-President, Engineering

G. M. Wilson
Treasurer

R. D. MacFayden
Secretary

C. K. Smith
Assistant Secretary

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Vancouver

The Canada Trust Company
Calgary, Regina, Winnipeg,
Toronto, Montreal

The Chase Manhattan Bank
New York

Auditors

Price Waterhouse & Co.
Vancouver

Audit Committee

C. B. Wright
(Chairman)

G. H. D. Hobbs

J. N. Hyland

William Moodie

J. A. Taylor

*Deceased December 15, 1978

